EDI VENDOR PROFILES

AND COMPETITIVE ANALYSIS

INPUT

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EDI Vendor Profiles and Competitive Analysis

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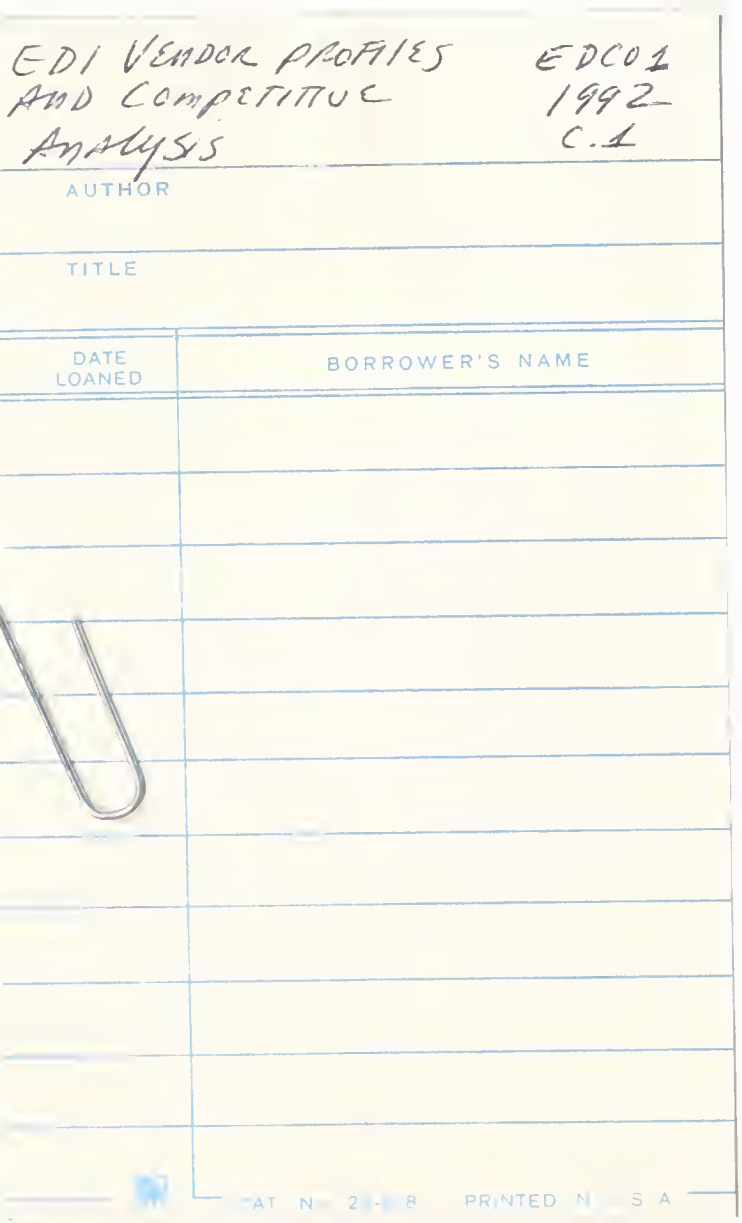
Abstract

This report is a compendium of descriptions of EDI products and services available today and background on the companies that produce them. In addition, INPUT shares its assessments of the companies, identifies their strengths and weaknesses, and compares them using various measurements, including market share, prices, and breadth of offering. In addition to the 42 vendors who have been specifically profiled, INPUT lists 240 individual vendors who have some relationship to the EDI marketplace. These vendors are listed according to delivery mode, including providers of EDI software, EDI/EFT software, turnkey systems, network services, professional services, telephone company services, industry clearinghouse functions, bank EDI/EFT processing, systems vendors for public networks, systems vendors for private networks, application software, and large EDI users.

The report is 188 pages long with 11 exhibits.



EDI VENDOR PROFILES AND COMPETITIVE ANALYSIS

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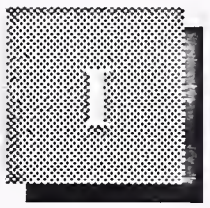


Introduction

A
Scope of the Report

In a single bound volume, INPUT provides a compendium of the EDI products and services available, and background on the companies that produce them. In addition, INPUT shares its assessments of the companies, identifies their strengths and weaknesses, and compares them using various measurements, including market share, pricing, and breadth of offering. The principal U.S. vendors are profiled.

- EDI users and prospective users will find this report valuable in that it is an independent, impartial source of vendor and product background and assessment. Product and service descriptions allow cross-comparisons and matchings to specific user needs. In addition, comprehensive analysis of the EDI vendor community gives the user a perspective overall on the directions of EDI usage and technologies.

- EDI software and service providers will find this report valuable in that it is a comprehensive, single source of competitive intelligence. Vendors can assess their competitors' strengths, weaknesses, product/service features, pricing, and market standings. The report also outlines the alliances and distribution channels individual vendors are using to market their offerings.

INPUT's analysis of EDI "solutions" versus "technology" vendors should provide any IS vendor in the EDI market or contemplating entering the market with a way to assess its competitive position relative to other vendors.

In addition to the 42 vendors who have been specifically profiled, INPUT lists 240 individual vendors who have some relationship to the EDI marketplace. These vendors are listed according to delivery mode, including providers of EDI software, network services, professional services, turn-

key systems, telephone companies, EDI/EFT software, industry clearinghouses, bank EDI/EFT, systems vendors for public networks, systems vendors for private networks, application software, and even large EDI users.

B
Data Collection

The data and information in this report is of two types: (1) objective data regarding company background, products and services, and (2) subjective assessments of company performance and success criteria.

The first type of data comes directly from information derived through communication with the individual companies. INPUT has an array of resources to accomplish this task, including:

- INPUT's ongoing Vendor Analysis Program, which profiles hundreds of key information service companies every year. INPUT works closely with the targeted companies to product these profiles.
- A data base of 3,000+ information services companies, including product literature, press clippings, financial documentation, press releases, and other general information.
- Ongoing communication between INPUT staff and information service companies that is documented in a variety of internal INPUT communications, questionnaires, and files.
- Other INPUT reports on information service markets and issues that often involve profiling or assessing various IS vendors and users.
- Specific company interviews for the purposes of compiling this report, directed at both vendor and user.

For the second, subjective, type of information in this report, INPUT draws on another array of resources, including:

- The experience of its consulting staff, most of whom have held senior executive positions in corporate and government IS establishments.
- An industry expertise gleaned by daily interaction with and research services for IS managers on both the vendor and user sides of the marketplace.

C

Report Structure

The report is divided into three major parts, and a fourth, this introductory part. The three major parts are:

- Chapter II, which overviews the general marketplace of EDI vendors and assesses their relative competitive positions through market share standing, pricing, and technology/solution orientation.
- Chapter III, which profiles the leading EDI vendor companies in detail.
- Chapter IV, which lists EDI vendors and related vendors by various delivery mode classifications. The listing gives corporate headquarters information so that readers can contact the companies.

D

Related INPUT Reports and Publications

This report, *EDI Vendor Profiles and Competitive Analysis*, complements INPUT's EDI market assessment report, *The U.S. EDI Market: 1992-1997*. That report, based on extensive user interviews, assesses the state of EDI usage today (in the U.S.) across industries, and notes the challenges and opportunities that users are encountering in their EDI programs.

Thus, The U.S. EDI Market report examines the *user side* of the market (and includes overall expenditures on EDI software and services broken out by vendor). This report, EDI Vendor Profiles and Competitive Analysis, examines the *vendor side* of the market—the products and services that are available and the nature and background of the companies that provide these products and services.

In addition, INPUT, in the course of 7 years covering the EDI marketplace, has produced an extensive series of reports and newsletters on EDI. A selection of the most recent reports and publications is listed below.

- *The U.S. EDI Market, 1992-1997* (1992)
- *The EDI Market in Japan, 1992-1997* (1992)
- *The Western European EDI Market, 1991-1996* (1991)
- *International EDI Markets* (due 4th quarter, 1992)
- *Electronic Commerce in the Media Industry* (1992)
- *Electronic Commerce in Travel and Tourism* (1992)
- *Electronic Commerce in U.S. Health Care* (1991)
- *Electronic Commerce in Trade and Transportation* (1991)
- *Electronic Commerce in Grocery Production and Distribution* (1991)

- *Electronic Commerce in Apparel Production and Distribution* (1991)
- *Electronic Commerce in the U.S. Federal Government* (1991)
- *Electronic Commerce: The New Foundation for Trade* (1991)
- *Developments in Corporate Electronic Trade Payments* (1991)
- *The U.S. EDI Market, 1991-1996* (1991)
- *The EDI Market, 1990-1995* (1990)
- *EDI: Business Integration Issues* (1990)
- *Western European Electronic Information Services—1990* (1990)
- *Financial Network Services in Western Europe—1990* (1990)
- *Advanced EDI Services* (1989)
- *EDI Standards Reference Guide* (1989)
- *EDI Implementation Case Studies* (Volumes I and II) (1988, 1989)
- *EDI and X.400* (1988)
- *The EDI Reporter International* (monthly newsletter)

II

Competitive Analysis of EDI Providers

In this chapter we summarize, using graphical exhibits, the relative positions and offerings of the key EDI software and service vendors. Specifically, these relative positions are characterized according to the following attributes:

- The degree to which the vendor offers a complete business solution (with a large suite of products and services) or merely a narrowly focused technology
- Prices charged for EDI software and services
- The vendor's market share

A Solutions Vendors versus Technology Vendors

In the EDI vendor community, there is an important distinction to be made between vendors of solutions and vendors of technology. Solutions vendors (EDS, GEIS) sell solutions that address the user's need, and the solution may or may not include EDI. Technology vendors (Texas Instruments, Supply Tech, Action Technology) only sell EDI or components thereof.

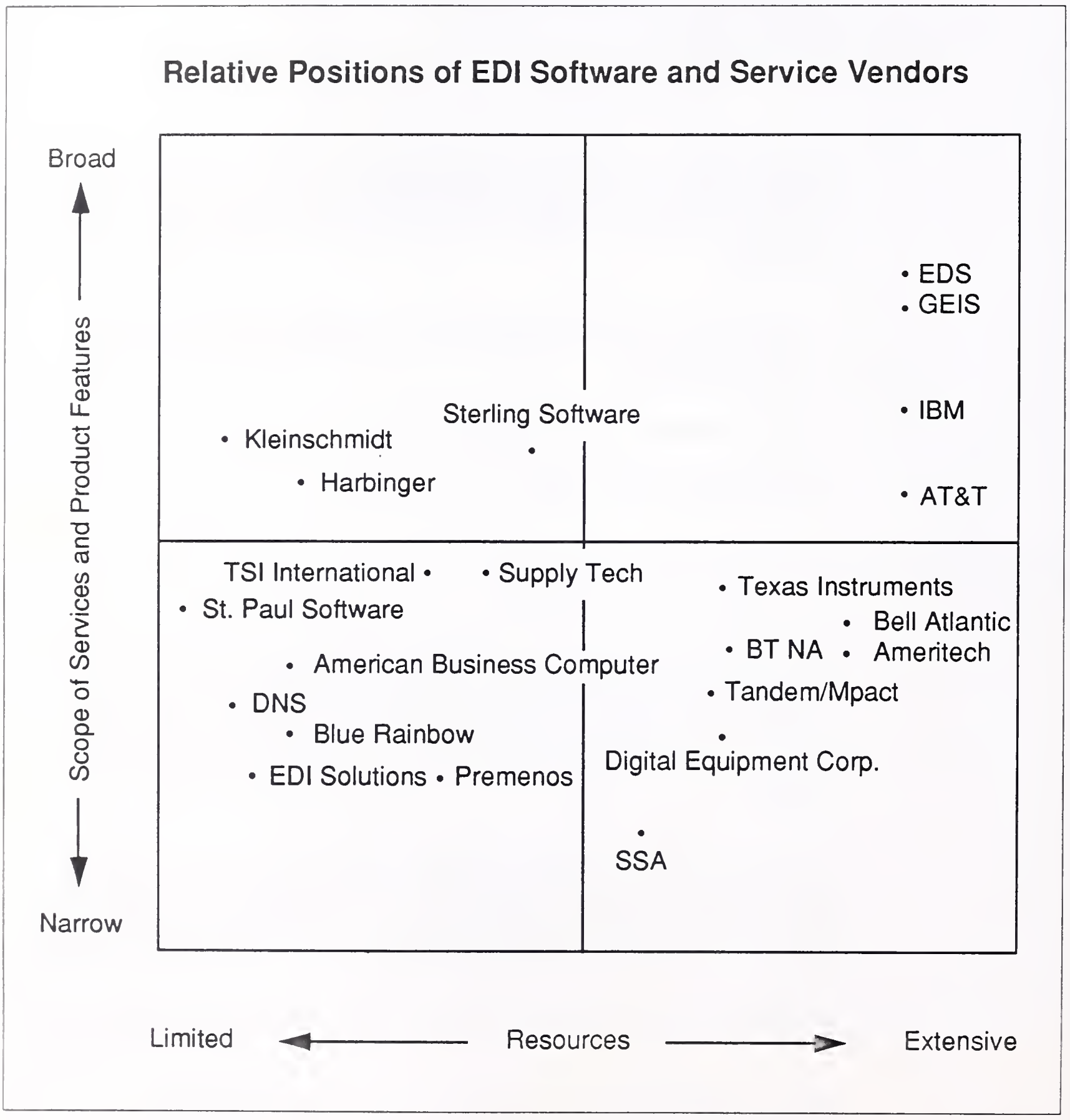
There is room for both types of vendors in the market and one way is not necessarily more successful than another. For example, Supply Tech is more profitable in absolute terms than the so-called solutions vendors. But it is absolutely critical that vendors know which type they are, because what you are determines who your customer is.

Solutions vendors sell to end-user organizations. Technology vendors sell to solutions vendors.

This is a simplification, but it underscores the essential difference in strategies. To further clarify strategies for vendors, one has to define an "end-user organization." Definitions of end user, solutions vendor, and technology vendor are relative.

Along with the scope or robustness of a vendor's offering, the capital reserves that the vendor has at its disposal are also critical to the vendor's strategy in the market. INPUT depicts the relative positions of EDI software and service vendors in Exhibit II-1.

EXHIBIT II-1



1. Characteristics of a Solutions Vendor

For a company to sell a solution, rather than just a technology, it must have one or more of the following:

- A combination of software, professional/consulting services, and network/processing services
- Strong technical skills in systems integration and implementation. The solution sale is not a one-time-only, "shrink wrap" type of sale, but one where at least integration/implementation services are provided.
- Strong expertise in the vertical market(s) in which it offers solutions. The vendor will employ personnel from the appropriate vertical market and will have an intimate, experienced understanding of the unique characteristics, requirements and business practices of the given market.

GEIS, Sterling Software, Advantis/IBM, and EDS are examples of solution vendors. All provide network services, software, and systems integration with expertise, in varying degrees, in specific vertical markets.

2. The Importance of Extensive Resources

The scope of a vendor's offering (whether narrow technology or full-service solution) usually depends on how large the company is. Large companies usually have more to offer. More importantly, companies with extensive resources have greater market staying power than do smaller companies.

Staying power is an important asset in the EDI market. The EDI market has been slow to develop. Users of EDI are taking longer than anticipated to integrate EDI messaging with internal applications. Vendors-particularly those who are more solution-oriented than are technology vendors-are having difficulty in achieving an acceptable rate of return on their offerings. There is a lot of up-front expense in developing, marketing, and selling an EDI solution/facility. As a result, a great deal of capital is required to sustain a solutions vendor over the early lean years of the product life cycle.

For a vendor to recoup its investment in an EDI product/service offering, it must sell the offering many times, typically into focused trading communities. Selling the offering many times amortizes the cost of development. Selling into targeted communities reduces sales costs.

Large capital reserves are usually required to compete in the EDI market because it takes years for the vendor to see a substantial payback on the money invested in developing the solution. Another way of looking at it is that it takes years for the vendor (or alliance of vendors) to fully deliver the EDI solution to a given trading community.

3. Different Pricing Strategies

Vendors are taking different approaches to selling their EDI offerings. Often the approaches overlap and all vendors, to some extent, have a little of each approach built into their own.

The basic types of approaches, in ascending order of risk, are:

- Line-item pricing. In this case, the vendor charges a basic retail price for each component of its EDI offering, whether it is translation software, communications, consulting services, mapping software, transaction set modules, etc. The cost of the service is the sum of the line items.

- Annuity/transaction-based pricing. Here the vendor is more interested in capturing a whole trading community or at least a large hub account. For example, implementing J.C. Penney's EDI program (including bringing up its trading partners) or supplying a trading community system at a shipping port are not single sales but streams of payments over time. The vendor may make up-front discounts on individual components as long as it can guarantee an ongoing stream of monthly network and/or software maintenance revenue from the parties in the trading community.

- Equity partner pricing. Here the vendor takes on the user's EDI program as part of a larger outsourcing contract. The vendor sets its outsourcing fee contingent on cost reductions that it can provide because of the efficiencies it can bring. No cost reduction, no pay. In some cases, the vendor may even pay up front for the EDI/data processing business as long as the client promises to give all its EDI/data processing business to that vendor. EDS is the only company known to have taken this approach, but others may be forced to follow this example as competition increases.

As in all things associated with risk, the greater the risk, the greater the potential payoff. Line-item pricing may insure that the vendor earns back, in small increments, what was invested in developing and marketing the offering. However, line-item pricing prevents the vendor from tapping the potential bonanza of keeping a whole trading community to itself. (Whether there really is a bonanza is questionable, but in some areas there seems to be potential.)

In general, only the solutions vendors are in a position to price on the annuity or equity partner plan. Pricing EDI at the line-item level is the approach used more often by technology vendors. However, through licensing agreements, where a solutions vendor resells a technology

vendor's product, the technology vendor can leverage its product through an annuity-like arrangement. DNS, Premenos, Blue Rainbow, Paper Free, Action Technologies, and countless others are examples of technology vendors with an annuity component to their revenues.

This is not to diminish the expediency of line-item pricing. All players start out pricing at the line-item level, if for no other reason than to maintain internal cost benchmarks. Solutions vendors, however-because they have more to offer and have more money-can be more flexible in their pricing arrangements.

4. Overall Competitive Strategy

Given the two categories of (1) robustness of the offering (technology or solution) and (2) capital reserves (shallow or deep pockets), INPUT distinguishes four general vendor types/strategies (see Exhibit 1).

- The rich solutions vendor (upper right quadrant) can compete on price and on differentiation. This is the most powerful position to hold in the market. However, the most successful EDI vendors to date are not necessarily in this quadrant.

- The rich technology vendor (lower right quadrant) competes more on price than on product differentiation. This vendor needs to start developing relationships with other technology vendors and solutions vendors to differentiate itself and become a solutions vendor. Ameritech's relationships with TSI, Supply Tech, and Blue Rainbow, as well as its acquisitions of health care and library software applications vendors, exemplify the logical strategy to pursue, given its goals and original product mix.

- The not-so-rich solutions vendor (upper left quadrant) must compete through differentiation. It doesn't have the reserves to compete on price. Sterling Software's Ordernet is an example of this strategy.

- The not-so-rich technology vendor (lower left quadrant) can compete neither on price nor differentiation. This is not to say that these vendors are worse off than other kinds of vendors. Supply Tech-essentially a not-so-rich technology vendor-is one of the most successful EDI companies. But to continue in the EDI market, these companies can no longer survive alone. Their strategic alternative-their *only* strategic alternative-is to compete through cooperation. That is, technology vendors will only be successful if they compete through alliances and reseller and co-marketing agreements. Some of these companies have enough reserves

to fill out their product lines and become more like solutions vendors (witness Supply Tech's offering of a mainframe translator and TSI's offering of PC and mainframe software). However, all the successful vendors in this category are successful because they have partners.

B

EDI Software and Service Prices

INPUT compiles prices of software and services of leading EDI vendors. The compilations do not cover every vendor nor do they go into detail on specific features of the products and services. We offer the following compilations to serve you as an index or benchmark of what the market will currently bear.

1. PC Software Prices

Exhibit II-2 lists prices for PC EDI software.

2. Midrange Software Prices

Exhibit II-3 lists key vendors of midrange EDI software and their current prices.

EXHIBIT II-2

PC Software Prices

Company/Model	Price
Supply Tech	
MS & PC DOS	$2,295 (includes 2 Overlays)
Overlay—each	$150 - $300
Harbinger	
Start-up DOS	$1,295
Full DOS	$1,995
Windows	$2,000 - $3,000
(still determining Windows pricing)	
TSI	
TrdPrtnr PC	$495
Kit (each)	$249 - $345
DNS	
EDI*Entry	$1,800
EDI*Edge	$2,500
Fast*EDI	$495 (still in Beta)
IBM/Advantis	
IBM PC QuickEDI	
Base offering	$1,495
Base w/1 sponsor collection	$2,030
Base offering monthly support	$49/month
Each additional sponsor collection	$535
Sponsor collection updates and changes	$200
EDI Inc.	
Telink	$2,600
Telink/lite	$1,595
Trans. set	$300 per set
Sterling Software	
PC/PS2	from $1,295
APL Group	
Qualedi	$2,700
American Business Computer	
EDE-PC	from $3,000
St. Paul Software	
Interconn	$1,995

EXHIBIT II-3

Midrange Software Prices

Company/Model	Price
Premenos	
EDI/400	$6,000 - $28,000
EDI/36	$5,700
EDI/38	$9,000
Blue Rainbow	
Multinet/400	$14,000 - $28,000
Sterling	
System 3/X	from $6,000
AS/400	from $7,500

3. Mainframe Software Prices

Exhibit II-4 lists mainframe software and prices.

4. Network Service Prices

Network service pricing has many variables. Some of the variables correspond to the many services that an EDI value-added network will typically offer the EDI user, such as translation, protocol conversion, internetwork connection, EDI education, trading partner implementation programs, etc. Others correspond to technical distinctions, such as logon counts, on-network data storage, baud (data transmission) rates, etc. Also, VANs are increasingly offering special rates to targeted communities (such as GEIS to the Port of New York/New Jersey; Sterling to the Ports of Seattle/Tacoma). Every VAN charges for services in a unique way. Please refer to the included fee schedules in the profile section. Note that not all VANs were willing to provide current fee schedules.

EXHIBIT II-4

Mainframe Software Prices

Company/Model	Price
Supply Tech STX	$19,500 - $39,500
IBM/Advantis DataInterchange	
TSI Trading Partner	$30,000 - $200,000
GEIS EDI*Benchmark	from $35,000
Sterling Software MVS DEC VAX	 from $37,000 from $7,500
American Business Computer EDI Server (UNIX)	$50,000 - $300,000
Digital Equipment Corporation DEC/EDI (translator) FileBridge (mapper) HostBridge (mapper for IBM mainframes)	 $10,000 - $90,000 from $11,500 from $36,000
Tandem/Mpact EDI Systems MessageWay EDI System 3 MessageWay EDI System 6 MessageWay EDI System 12	 from $45,000 from $90,000 from $180,000
St. Paul Software Gateway (UNIX)	$9,000 - $36,000

C

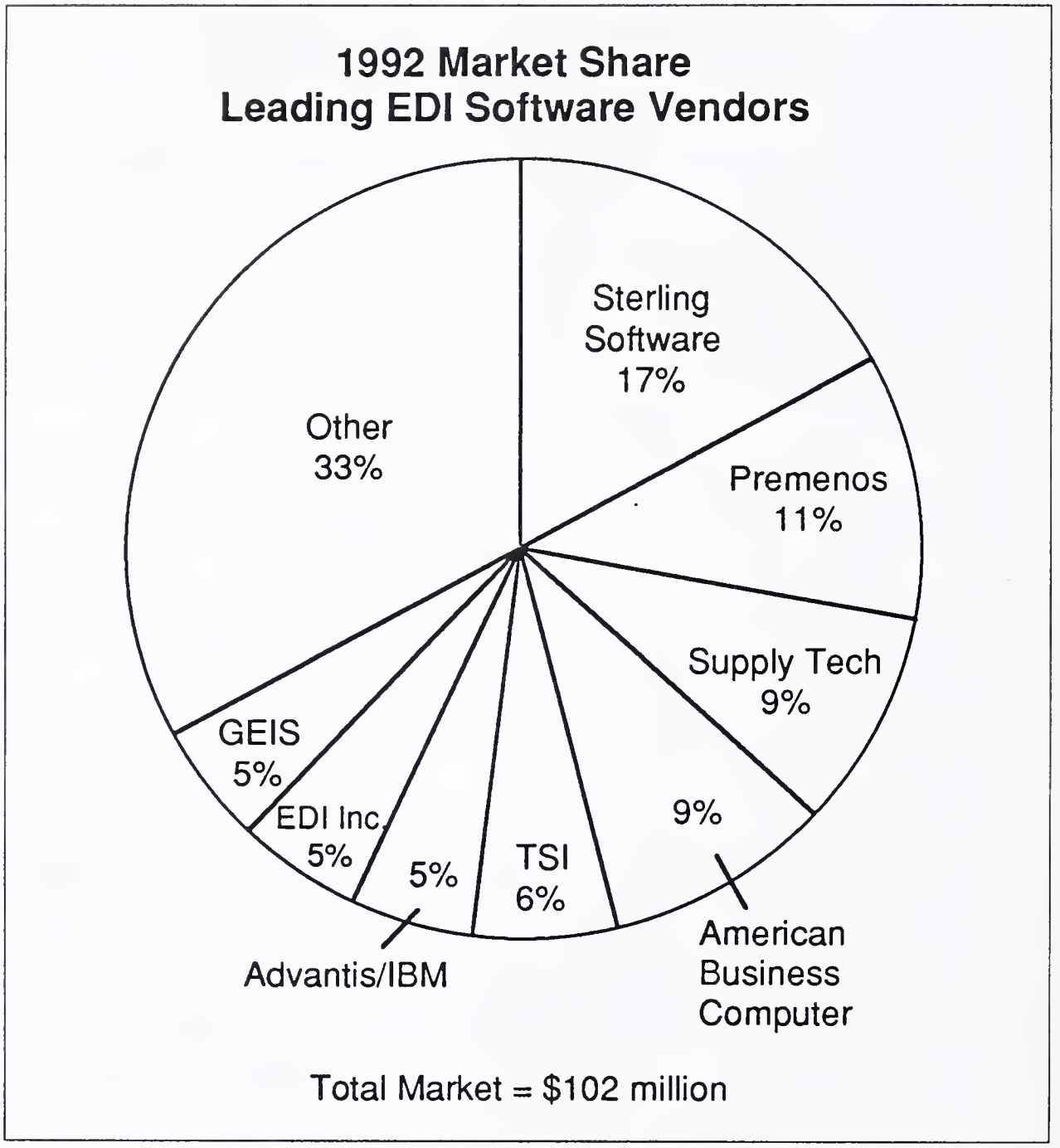
Market Share of EDI Vendors

The following market share exhibits are derived from INPUT's annual EDI market study, The U.S. EDI Market: 1992-1997. For more details, such as market share by platform, please refer to that report.

1. EDI Software Vendor Market Share

Exhibit II-5 shows leading vendors of EDI software and their overall market shares.

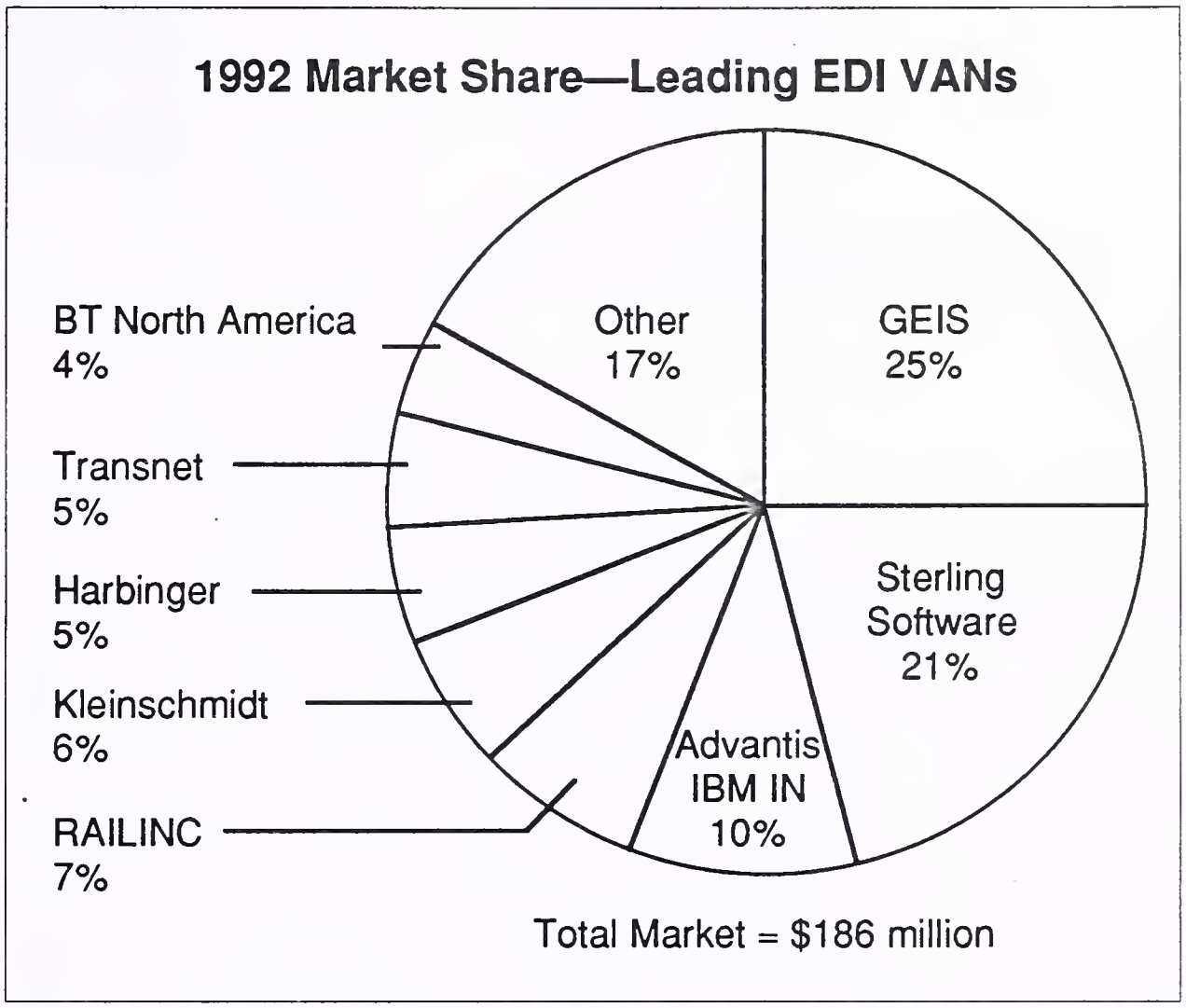
EXHIBIT II-5



2. EDI Value-Added Network Market Share

Exhibit II-6 shows leading EDI value-added networks (VANs) and their market shares.

EXHIBIT II-6



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Conclusion

Given this competitive analysis framework, EDI vendors can be assessed on their individual merits. This is the focus of the next chapter.

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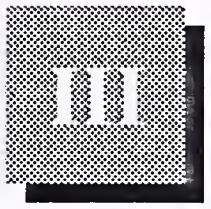

Profiles of Leading EDI Providers

A

Advantis

231 North Martingale Road
Schaumburg, IL 60173-2254

Syd N. Heaton, Chief Executive Officer and Chairman
Gary Weis, Chief Operating Officer and President

Joint venture company of IBM and Sears, Roebuck & Co.
Total Employees: 3,000
Total Revenue, Fiscal Year End 12/31/91: $375 million*
*INPUT estimate of IBM IN revenue

1. Description of Principal Business

Advantis was created in August 1992 by the merger of the IBM Information Network (based in Tampa, FL) and the Sears Technology Group (and its global network) based in Chicago, IL. It wasn't publicly disclosed whether there was a financial transaction, but it appears that IBM paid Sears for its business. Sears is a minority equity partner in Advantis. The majority of Advantis is owned by IBM's Integrated Systems Solution Corporation group (IBM's outsourcing arm). IBM is positioning the combined networks as a central vehicle to commercially provide information systems operation services to corporate clients. Although unannounced, Sears, Roebuck will undoubtedly have IBM manage all of its data processing functions. All 1,500 Sears Technology Service employees will join Advantis, as will a similar number of IBM employees from its Networking Systems Services.

The following is IBM's statement of Advantis's mission:

"Advantis is an information networking services company providing customers with a broad range of Electronic Marketplace* solutions. Advantis will offer private managed network and value-added network services for intra- and inter-enterprise networking solutions that enable companies to do business with their trading partners and business associates worldwide.

"Private managed network services include design, development, integration and network management to give customers a competitive advantage. Value-added network services address specific business communications needs in the network, messaging and capacity services area. These services make it easier for customers to do business electronically." (*Electronic Marketplace is a registered trademark of IBM.)

Exhibit III-1 shows some characteristics of Advantis.

EXHIBIT III-1

Advantis Statistics

Customers (U.S. only)	9,000+
User IDs	1 million+
International Access	92 countries
U.S. Access Points	550 cities
Data Center Sites	Schaumburg, IL Boulder, CO Columbus, OH Dallas, TX Tampa, FL White Plains, NY
Networks Attached	3,000 in U.S.
T1 Circuits	2,500
Video Conference Centers	1,100

2. Markets Served

Advantis is used by clients across industry sectors. The network's customer base includes more than 900,000 registered user IDs. Before the merger, INPUT estimated that approximately 50% of IBM Information

Network's revenue was derived from the U.S. and 50% from international sources. Sears' network was largely a captive network (used entirely for Sears business) and therefore revenue was a difficult number to impute.

More than 9,000 U.S. customers and 900,000 user IDs are currently connected to the IBM Information Network and the Sears Communications Company.

3. Evaluation

Combining the networks will bring together many network-service synergies and complementary groups of industries. The Sears network provides E-mail, EDI, credit card transaction processing, bank-to-bank EFT (ACH), and data communication services for its many subsidiary businesses (in retailing, insurance, real estate, and securities brokering) as well as commercially (in the EDI, health care, and ACH/banking areas). The IBM network likewise provides E-mail, EDI, and data communication services for other divisions of IBM (especially for its sales and service fleets) and commercial clients. In addition, IBM provides a number of electronic information services (on-line data bases).

Both networks have international reach, are high speed (1.54 megabits per second leased line; 300 to 19,200 bits per second dial up), and are based on IBM's SNA data communication architecture/protocols.

The combined networks have the potential to be a powerhouse network. The capacity is high, the services are robust, and the companies and industries already connected or using the networks are diverse and represent most sectors of the economy.

Placing network services, especially EDI and electronic commerce services, at the disposal of IBM's outsourcing group is highly strategic. EDI is a peculiar form of outsourcing, particularly when a single network handles all EDI hook-ups for a single hub company. IBM's outsourcing and EDI business will also reinforce each other, given the wide scope of customers that are on the Advantis network. For example, IBM IN's strong position in EDI services for the property and casualty insurance industry will be further strengthened as IBM now outsources all the data processing for Sears' Allstate Insurance Group. New kinds of streamlining of industries will be made possible (more on this in the September issue of the EDI Reporter).

The move also indicates how important the retail sector is becoming. Sears is the second largest retailer in the country (just recently overtaken by Wal-Mart) and will give IBM an even stronger presence in this sector. IBM has traditionally been strong in the retail sector, particularly with its line of point-of-sale equipment. Most of the outsourcing contracts in the retail industry to date have gone either to IBM's ISSC or to Litton.

Tactically, the merger represents an especially good move on the part of Sears, which needed the cash. Although neither Sears nor IBM officials would say whether there was a cash transfer involved in the merger, it appears that IBM paid something for it. IBM owns the majority stake in the new venture.

Although both networks consist solely of IBM equipment and architecture (and therefore will technically be easy to combine), several quarters will certainly pass before the commercial synergies of the combination can be realized.

4. Products, Services, and Prices

Advantis offers customers the following services:

Network Services: This is the basic service of connecting a company's computers through a secure international network that is managed by a third party. Customers can connect their facilities in a terminal-to-host, host-to-host, or a peer-to-peer communication configuration. Protocols supported are: SNA/SDLC, X25, Asynchronous, Bisynchronous, ISDN, TCP/IP, and APPN.

Messaging Services: These include E-mail and EDI. They include: IBM Mail Exchange, IBM Information Exchange (file transfer), IBM expEDIte Communicator Series (communication software for EDI users), IBM expEDIte DataInterchange Series (EDI translation software), SCC Direct File Transfer, SCC File-to-Fax, SCC EDI, and SCC Store-and-Forward.

- The E-mail service provides support for host, midrange, and office systems that conform to the X400 messaging standard, including commercial interconnections to 20 electronic mail providers.

- The EDI service allows customers to send and receive EDI messages from 13 other VANs. EDI formats supported are ANSI X12, UCS, UN/EDIFACT, UNTDI, AIAG, and VICS.

Industry Solutions: Advantis' Electronic Marketplace™ (formerly a new IBM IN offering) provides support for a community of common interest. For example, the Insurance Value Added Network Services (IVANS) supports agents of property and casualty insurance. More than 30,000 users are currently connected to IVANS via IIN and SCC.

Computing Resources: Customers can have access to IBM software and mainframe computer resources. Capacity services are available in a shared environment.

Private Managed Networks: Advantis will design, implement, and manage a network that specifically addresses a customer's needs.

Network Integration Services: Advantis will provide advice, guidance, and on-site assistance in telecommunications, including long- and short-term planning, integration, and implementation.

Access to Advantis is available from 92 countries worldwide. Worldwide connections will be provided by a variety of Advantis affiliates.

B

American Business Computer

1988 Green Road
P.O. Box 305
Ann Arbor, MI 48106-0305
(313) 930-7840

Kimba Vasquez, President
Division of TSM Computing Group
Total Employees: 40
Total Revenue, Fiscal Year End 6/31/92: $3 million*
*INPUT estimate

1. Description of Principal Business

American Business Computer (ABC) is one of the first vendors of "off the shelf" EDI software. Formed in 1976, ABC operates as a division of TSM Computing Group. The parent company, Thomas S. Monaghan Inc., is owned by Thomas S. Monaghan, CEO and founder of Domino's Pizza, Inc., and owner of the Detroit Tigers Baseball Club.

2. Markets Served

ABC has a large customer base in the automobile supplier industry with its PC EDI translation software, EDE-PC. With its larger system, the UNIX-based EDI*Server product, it has targeted large hub accounts and the U.S. government, through an alliance with NCR. ABC also supplies GEIS with its UNIX product, which GEIS resells under its own label.

In addition to the automotive industry, ABC has installations in the health care, manufacturing, retail, electronics, telecommunications, government, chemical, and wholesale industries. ABC markets products in the U.S., Canada, Mexico, and Australia. ABC also has sister offices in the U.K.

INPUT estimates that ABC has 1,500 installations of its PC product, 200 installations of its EDI Excel product, and 20 installations of its Server product.

3. Evaluation

Strengths

- Premier UNIX-EDI Provider. ABC is distinguishing itself as the premier provider of UNIX-based EDI software, with the most comprehensive and widely installed product line of UNIX EDI translation software. Providing EDI software that runs in a UNIX environment makes sense,

INPUT believes, and UNIX-based EDI software will gain rapid market acceptance over the next three years. UNIX-EDI allows EDI users to (1) EDI software. INPUT finds that more than half of the EDI users replace their EDI software. With UNIX-based software, this upgrading process can be made smoothly (for example, retaining existing application program interfaces).

- Deep Financial Resources. ABC is a subsidiary of Thomas S. Monaghan Inc., which gives it access to funds. Its advanced UNIX technology is an example of the kind of superb product development that solid funding can guarantee.

- Solid Technology Staff

- Strategic Relationships/Alliances. ABC's alliances with GEIS and NCR give it two strong customers to which it can channel its products. All together, it has 8 relationships and is aiming to have 20.

Weaknesses

- Limited Direct Sales Force/Distribution Channels.

4. Products, Services, and Prices

EDI-Server: UNIX-based EDI gateway for integrating EDI into business environments. Benefit: a server eliminates the redundancy of installing individual EDI translators on multiple host-based application systems, thereby reducing the resources required to maintain an EDI program. When EDI activity is localized on a single server, programming efforts and staff requirements can be reduced.

Runs on IBM RS 6000, NCR Tower, AT&T 3B Systems, HP 9000s, Gould, and Sun Microsystems.

EDI-Server prices range from $50,000 to $300,000, with $150,000 to $200,000 being the average purchase price of installations so far.

EDI-ExCel: Designed for users with minimal technical expertise to get the system up and running. Easy on-line mapping facilities. Comes in pre-programmed packages for specific vertical market environments: retail and auto. The package is priced from $7,000 to $50,000.

EDE-PC is an automotive turnkey product that incorporates the key functionality of EDI and bar coding to provide users with a stand-alone automotive solution. The package is priced from $3,000 to $10,000.

5. Alliances

- GE Information Services
- NCR/AT&T—Strategic Solutions Partner
- Symix
- Vocam
- NEIS (National Engineering Information Services), a network provider in Australia
- Hewlett-Packard—Premier Solutions Provider. HP has selected ABC as its premier UNIX provider for HP 9000 customers.
- IBM—Information Network Business Partner.
- BT North America—Certified software provider.

6. Chief Competitors

The capstone of ABC's strategy is to be the premier provider of UNIX-based EDI software. Therefore, its chief competitors are the other providers of UNIX EDI, which currently include Premenos, Sterling, St. Paul Software, and Texas Instruments. ABC also faces competition from the multitude of PC EDI software providers.

C

Ameritech

30 South Wacker Drive
Chicago, IL 60606
(312) 750-5000

William L. Weiss, Chairman and CEO
Robert L. Barnett, Vice Chairman and President, Ameritech Bell Group
Public Corporation, NYSE
A Regional Bell Operating Company
Total Employees: 73,967 (12/91)
Total Revenue, Fiscal Year End 12/31/91: $10.8 billion

1. Description of Principal Business

Ameritech, one of the seven regional telecommunications companies formed by the breakup of the Bell System in 1984, provides communications services to both the commercial and residential markets.

In May 1992, Ameritech launched its EDI offering. It makes the offering through alliances with EDI software manufacturers, TSI International, Blue Rainbow Software International, Supply Tech, and Scientific Software. It has an agreement with Stratus to provide hardware for a turnkey EDI/electronic commerce solution to large hub users. Ameritech sees EDI billing to its largest (voice) telephone customers as not only an efficiency gain but a business opportunity to which it can supply a service. It is targeting its largest customers to deliver X12 811 invoices requiring these customers to open an electronic mailbox on its data network.

EDI is only one component of a larger network service offering that Ameritech calls Ameritech Information Exchange Management.

Ameritech has aggressively sought to assemble a wide variety of network-based, electronic commerce product offerings to leverage its telecommunications infrastructure. It has made acquisitions in the health care, library, audiotext and voice messaging areas.

2. Markets Served

Ameritech's revenues are derived cross-industry, including residential and business customers. Approximately 99% of Ameritech's 1991 revenue was derived from the U.S. Ameritech's Bell companies primarily serve clients within the states of Illinois, Indiana, Michigan, Ohio, and Wisconsin. Its EDI services are initially aimed at clients within its operating territory but, like its other service and software products businesses, EDI services are available nationwide.

3. Evaluation

Ameritech is making the right moves by pursuing application areas outside of its heritage phone service business. The jury is still out as to whether this Regional Bell Operating Company can act efficiently in a competitive marketplace, a practice that is new to it. It is unfamiliar with market-driven businesses and it has an overgrown bureaucracy. Also, its confinement to a nine-state operating territory—even though it can serve customers outside its territory—diminishes its competence to serve a company's trading partners, wherever they are.

4. Products, Services, and Prices

Ameritech Information Systems, with 2,000 employees, is Ameritech's sales channel for EDI, along with other network services and products to major business, government, and institutional customers. It provides telephone systems and other customer premise equipment and provides systems, consulting, integration, and design services to clients and Ameritech. Ameritech places EDI as one tool in its Ameritech[R] Information Exchange Management offering.

In general, the Information Exchange Gateway offers: interactive transaction processing, full-function store-and-forward mailbox capabilities, flexible communication options, interconnection to major networks, security options, and customization features.

a. EDI Offering

Ameritech offers EDI systems design, planning, and implementation services in addition to EDI network services. Its program is called EDI Assist. Ameritech resells EDI translation software produced by TSI International, Blue Rainbow Software International, and Supply Tech Inc.

b. Related Offering

Ameritech is positioning EDI software and services in its Ameritech Information Exchange Management offering. Other services in this offering include

- Ameritech is designing a hospital-wide network for voice and data, planning the implementation of network applications, and providing project management services for Marquette General Hospital's (Michigan) medical records system.

- The Wisconsin Health Care Information Network provides a systems solution for health care institutions to electronically send and receive patient information through a common user interface.

- Knowledge Data Systems provides Tandem-based turnkey systems, implementation support, and data processing management services for hospitals, health maintenance organizations, private laboratories, and clients.

  - Knowledge Data has five primary products: A patient care system, a clinical laboratory system, a pharmacy management system, an ambulatory care system, and an electronic medical record system (Knowledge Keystone).

  - Knowledge Data markets its products throughout the U.S. and internationally. Major customers include Henry Ford Health System (Detroit), Kaiser Permanente (Oakland, CA), and the University of Minnesota Hospital and Clinics (Minneapolis).

- NOTIS Systems, Inc. provides academic library software and support services to more than 200 libraries worldwide, including libraries in the U.S., Canada, and New Zealand, as well as the national libraries of Venezuela, Chile, and Colombia.

- In January 1992, Ameritech announced an agreement to acquire Dynix Management, Inc. of Provo (UT). Dynix provides a UNIX-based product set of library automation systems to public libraries of varying size, and to school, academic, and special libraries.

c. Related Electronic Commerce Services

- Ameritech Mobile Communications, with 1,500 employees, provides wirefree communications, including advanced cellular telephone and paging products and services.

  - In November 1991, Ameritech completed the acquisition of CyberTel Financial Corporation for approximately $500 million. CyberTel provides mobile telephone services in Illinois and Missouri and paging services in Illinois, Minnesota, and Missouri.

- Ameritech Publishing, headquartered in Troy (MI) with nearly 3,000 employees, publishes the Ameritech PagesPlus® directories, as well as other specialty directories and publications.

- Ameritech Audiotex Services, based in Chicago (IL) with 20 employees, provides voice response services to deliver information, promotion, and customer service programs via the telephone.

- The Tigon Corporation, headquartered in Dallas (TX) with 230 employees, provides voice messaging services in the U.S., Australia, Canada, Europe, Japan, and Taiwan directly or through co-marketing agreements.

- Ameritech Credit, with 50 employees, provides financing and leasing of computer hardware and communications products and services for business, government, and institutional customers of the Ameritech companies.

- Ameritech Development, with 70 employees, assists in developing new business ventures and invests in communication and information technologies.

- Ameritech International, formed in May 1990, develops business opportunities for Ameritech outside the U.S.

  - In May 1991, Ameritech, Bell Atlantic, Time-Warner, and Tele-Communications, Inc. purchased a 51% interest in Sky Network Television, a pay-TV operator in New Zealand.

  - During 1991, Ameritech, France Telecom, and the Polish Post Telegraph and Telephone formed a partnership to construct and operate a nationwide cellular system in Poland.

  - In September 1990, Ameritech and Bell Atlantic purchased Telecom Corporation of New Zealand for about $2.5 billion. To comply with New Zealand government requirements, Ameritech and Bell Atlantic will reduce their combined ownership of Telecom to 49.9% by September 1992.

Ameritech Publishing restructured during 1991 to focus on product quality and growing the core consumer and commercial segments. Ameritech Publishing's 1991 revenues rose 4.7% over 1990 levels.

- Total directory circulation for the year reached about 44 million copies.

- The primary product is PagesPlus[R] yellow pages directories published in Indiana, Michigan, Ohio, and Wisconsin.

- Touch Four™ is an audiotex+ service that stores and retrieves recorded information via touch-tone telephone. It is marketed to advertisers and users of PagesPlus.

D

The APL Group, Inc.

644 Danbury Road
Wilton, CT 06897
(203) 762-3933

George Brigham, President
Private Corporation
Total Employees: 20
Total Revenue, Fiscal Year End 12/31/92: $3.5 million*
*INPUT estimate

1. Description of Principal Business

The APL Group was founded in 1983 by George Brigham and Daniel Codman for the sole purpose of developing software for electronic data interchange (EDI). The company's products and services include QualEDI[R] EDI PC-based translation software, annual software maintenance and customer support, EDI education, and EDI consulting.
The APL Group has targeted its PC product to be the premier PC-based translator for companies wanting to integrate EDI with existing software applications. These applications may be running on other than PC platforms.

2. Markets Served

APL's QualEDI software package has been installed in 18 different industries, including retail, aerospace, grocery, telecommunications, airline, utility, chemicals, manufacturing, transportation, and distribution. Value Added Resellers are responsible for approximately 10% of sales. The company has installations in the U.S. and Canada.

3. Evaluation

Strengths

Good product quality, good customer support. Also, principal Dan Codman is intimately involved with EDI standards development committees (ANSI X12 and EDIFACT) worldwide, giving APL greater exposure and allowing the company to be cognizant of new standards and standards-related developments.

Weaknesses

Limited resources in sales, marketing, and research and development will probably consign APL to being a small, peripheral EDI software player.

4. Products, Services, and Prices

Approximately 75% of the company's revenue is derived from software products and 25% from professional services.

QualEDI, originally introduced in 1984, is a micro-based translation software product supporting all public EDI standards. The software is now at release nine (9).

- QualEDI has standards-compliance verification abilities. At each level of the EDI transmission (interchange level, group level, and transaction set level) QualEDI verifies that all data elements and segments adhere to the standards. If errors appear, they are reported and, in some instances, corrected.

- The product supports unattended scheduled operations.

- The QualEDI front-end acts as either a front-end to a mainframe or mini, or as a stand-alone workstation. It features modes for testing the mainframe interface and new correspondents. The front end sells for $3,200.

- The QualEDI service bureau is an enhanced mode of the front-end. The user of the system is not the sender or receiver of the documents, as in the front-end mode, but serves instead as the service bureau for a number of internal correspondents who are the real senders and receivers. The user system is, in this case, an interface between multiple internal and multiple external correspondents.

- Data mapping capabilities allow for two types of record formats: fixed position and variable length.

- The multiple-correspondent workstation enables the PC to act as a stand-alone, key-entry terminal for sending and receiving EDI documents with any number of trading partners. The multiple-correspondent workstation sells for $2,700.

- The single-correspondent substation is used for communicating with only one correspondent, and sells for $1,650.

- QualEDI operates on any MS-DOS PC/XT-, AT-, or 386-compatible microcomputer equipped with a serial port, an internal clock, 640K of RAM, a 10-megabyte hard disk, a monochrome monitor, and an 80-character printer. A modem and communication software are required for communications.

- QualEDI supports the following standards: ANSI X12 (all industries, including CIDX, AIAG, CDX, VICS), UCS (grocery/retail), WINS (warehousing), TDCC (transportation), and EDIFACT (international).

- Data communications networks supported by the product include the following: BT North America, TranSettlements, Sears Communication Company, Ford, Telecom Canada, AT&T, Ordernet, Kleinschmidt, GE Information Services, CompuServe, Railinc, and IBM Information Network (APL participates in the IBM Business Partner Program; it is on BT North America's Alliance Partner program; and it signed a national cooperation agreement for marketing, sales, and implementation with AT&T). Additionally, the software supports point-to-point implementations.

- Communications software supported by QualEDI is determined by which of the 14 networks the customer uses.

The APL Group also provides professional services such as customization and consulting services, in addition to providing its customers with installation services, a tutorial demonstration, and hotline support. On-site installation/support/training costs $500 per day plus travel expenses. Monthly EDI education classes cost $250 per day per person.

5. Alliances

APL is strategically allied with Greentree Software (New York, NY), which produces CAP3 Computer Assisted Purchasing software. The alliance is intended to provide complete EDI capability to purchasing professionals. APL is also allied with TanData Corporation (Tulsa, OK), a small package shipping software development corporation.

E

ARI Network Services, Inc.

330 East Kilbourn Avenue
Milwaukee, WI 53202-3166
(414) 278-7676

Edward D. Markham, President & CEO
Jeffrey A. Joerres, Vice President Marketing
Dana L. Steimke, Vice President, Information Systems

Public Company (NASDAQ/NMS:ARIS)
Employees: 134
Total Revenue, Fiscal Year End 7/31/92: $3.8 Million

1. Description of Principal Business

ARI Network Services, Inc. (ARI) provides electronic commerce (EC) services including EDI and other computerized network and information services to targeted sectors of the U.S. agribusiness industry.

Founded in 1981 as a business publishing company for agribusiness, ARI started developing network-based electronic commerce services in November 1985 as part of a joint development agreement with IBM.

ARI's network services include computer-to-computer connectivity, EDI services, electronic mail, file transfer, customer specific transactions processing, and related professional services including network application development, consultation, training, and support.

Network applications are divided into five functional categories: (1) product ordering; (2) sales reporting; (3) sales force automation; (4) data base services; and (5) customer support systems.

ARI recently introduced an *immediate-response EDI* service for product ordering that allows retail dealers to communicate on-line with manufacturers and wholesalers to confirm the availability of parts, place emergency orders and check order status.

ARI also provides a range of on-line information services customized for the agribusiness sector.

2. Markets Served

ARI's electronic commerce and EDI network services are targeted to manufacturers, wholesale distributors, and dealers in several distribution channels within or closely related to the agribusiness industry. These channels are agrochemical, specialty chemicals, animal health pharmaceuticals, farm equipment, and outdoor power equipment.

The agrochemical industry is a $7 billion industry dominated by 15 major manufacturers which distribute products through some 200 distributors and 25,000 retail-level dealers. ARI serves 11 of the 15 major chemical manufacturers representing over 90% of industry revenues. Four of these manufacturers have mandated that all their distributors use ARI's network. Seven have signed long-term network agreements. At its year end 7/31/92, ARI linked manufacturers to 129 distributors, representing over 95% of industry sales volume.

Farm equipment is a $10 billion industry with more than 600 manufacturers, 300 wholesale distributors, and approximately 25,000 retailers. ARI was serving 48 manufacturers at 7/31/92, and some 1,500 dealers had committed to use the network versus 700 a year earlier. ARI recently expanded services to include outdoor power equipment manufacturers, wholesalers, and dealers.

The animal health industry, unlike equipment and agrochemical, has not yet joined together for an industry-common network service. ARI is focused on some 40 major manufacturers and key distributors. ARI now serves 7 manufacturers with 400 users of sales force automation services. This sector includes 150 pharmaceutical and feed additive manufacturers and 200 feed and feed additive manufacturers.

3. Evaluation

Strengths

- Good Technology. ARI has invested several years and over $26 million to develop a strong technology foundation including a robust network platform with applications that address real market needs in terms of specific real-time responses to dealer/manufacturer communications and interoperability of multivendor environments (multiple manufacturers can be accessed through the same dealer terminal).

- Strong Customer Relationships. ARI's manufacturer customer relationships have been developed over several years during which applications were cooperatively defined and developed. Although most of its customers are in the early stages of implementation, customer commitment is strong and ARI's narrow focus on agribusiness has made them a knowledgeable and responsive partner for major customers just entering the world of electronic commerce and EDI.

- Seasoned Management. The CEO was formerly one of the top executives who developed IBM Information Network (IBM/IN) in the 1980s and, among other things, was responsible for IN's business relationship with the Insurance Value Added Network ("IVANS"), an electronic commerce service for the property and casualty insurance industry. The chairman runs a venture capital firm which specializes in EDI and electronic commerce companies.

- Industry Focus. ARI's narrow focus on selected agribusiness channels has enabled it to be expert in the business practices of the sector, trusted by the corporate participants and readily capable of building and operating network applications that precisely match customer practices and needs.

- Competitive Position. No real competitors in the agribusiness niche though ARI's activities in the animal health industry touches shoulders with Sterling Ordernet's services for the human pharmaceutical industry. The shared distribution systems in agribusiness appear to be a viable niche where manufacturers/distributors and dealers will find value-added network, electronic commerce, and EDI services, such as ARI, to provide real value.

- Market Offering Extendibility. ARI's network services are applicable to any kind of distribution value chain. Given the necessary industry expertise to sell and service new industries, ARI could transplant its products and services.

- Strong Financial Backing. Prior to its public offering in November 1991, ARI had received $43 million in capital backing to develop and operate its network platform and to support the market development effort. This backing came from IBM and several financial institutions and investment firms who are still shareholders, led by QUÆSTUS L.P., a private investment firm that specializes in network services companies; Electra Investment Trust (U.K.); Candover Investment Trust (U.K.); E. M. Warburg Pincus and Company; State of Wisconsin Investment Board; and WITECH, the venture arm of Wisconsin Energy Corp.

The public offering raised an additional $27 million. At 7/31/92, ARI had a strong balance sheet with $10 million in cash and a $3.0 million unused line of credit.

Weaknesses

- Financial. Whereas ARI's balance sheet is reasonably strong, revenues over the past three years since EDI services were first introduced have amounted to only $9.2 million and have been relatively flat year to year. ARI has never made a profit. Although 1992 fiscal year revenues grew to $3.8 million (at 7/31/92) or 24%, revenue must grow at a more rapid pace to make ARI a viable company. Some analysts expect ARI's revenue in fiscal 1993 to double.

- Realization of Market Potential. Although the agribusiness niche appears to be viable and ARI has established valuable long-term business relationships, it has barely scratched the surface in terms of realizing its potential.

4. Key Issues

The company has good technology, a well-defined niche, loyal and committed major manufacturer customers, a supply of capital and committed institutional investors—one of which (QUÆSTUS) is a respected specialist in EDI and capable of providing strategic guidance.

It's manufacturer customers are in the early stages of implementation, which appears to be going more slowly than ARI had expected. ARI must be able to accelerate this implementation process to wipe out losses.

The company makes a good acquisition target for any network or EDI company wanting to buy a franchise in a niche.

The company is one of the few EDI companies whose financial health and progress is publicly disclosable. It is, therefore, somewhat of a financial bellwether for EDI in general.

F

AT&T EasyLink Services

400 Interpace Parkway
Parsippany, NJ 07054
(201) 331-4322

EDI Contacts:
Charles Kryda, EDI Product Manager
John Sinko, EDI Product Manager
Jim Kwok, EDI Product Manager

1. Description of Principal Business

AT&T formally launched AT&T EasyLink Services on January 1, 1991, combining various AT&T global messaging services with similar services acquired from Western Union. AT&T EasyLink provides corporate customers with network services for Electronic Mail, Electronic Data Interchange, and Enhanced Facsimile. It resells and recommends EDI software products from other EDI vendors. EasyLink's message processing centers are located in five countries: the U.S., U.K., Hong Kong, Japan, and Canada. E-mail, EDI, and facsimile messaging can move among all centers under a single pricing schedule.

2. Markets Served

AT&T EasyLink targets its markets in accordance with AT&T corporate's strategies. The Industry Marketing Group of AT&T corporate sets the market directions for the EasyLink Services group. Target markets are: petroleum, transportation, wholesale/retail distribution, health care, insurance, financial, legal, and aerospace/electronics.

At this time, INPUT estimates that AT&T has approximately 500 EDI clients.

3. Evaluation

AT&T EasyLink, combined with the strategic strengths of AT&T corporate (especially with corporate's acquisition of computer maker NCR), puts it in an especially strong market position to provide EDI, messaging, and total "electronic commerce" solutions to businesses.

With services in voice, facsimile, and EDI/E-mail messaging combined with its credit card business, and NCR's dominant positions in the retail (point-of-sale) and banking (automatic-teller machine) markets, AT&T is poised to electronically support every kind of commercial transaction: consumer or corporate, cash, charge, check, or EFT. With a meter running at every point of exchange, even a fraction-of-a-cent charge would give AT&T a guaranteed revenue stream that is significant.

AT&T's product/service portfolio allows it to "have its finger on the pulse" of consumer money movements, whether card or cash facilitated. Also, it has its finger on the pulse of commercial transactions: at the retail outlet (with POS machines and its Universal Credit Card), among corporations (with an EDI and enhanced fax network), and among private party consumers (who use their ATM machines for cash).

AT&T can collect its "tolls" for all this transaction traffic through one consolidated telephone bill. Ultimately, this bill can be paid for electronically and automatically using a preauthorized debit mechanism—a network service that AT&T may offer next if it chooses to move further into financial services (beyond its credit card and ATM offerings).

AT&T is probably the furthest vendor worldwide along the path to providing a cashless and paperless society infrastructure. Nevertheless, its information services business today remains largely with voice (counting the NCR subsidiary as primarily an equipment business). AT&T is potentially in the position of being the central clearinghouse for IOUs in the economy—IOUs between consumers and corporations, and IOUs between corporations. A move further into financial services by AT&T wouldn't be surprising.

Strengths

- Broad portfolio of products and services that provides consumers and corporations integrated voice and data communications solutions. Best positioned to capitalize on "cashless" and "paperless" trading mechanisms. Because it has voice services, AT&T is broader than today's EDI VANs. Because it has advanced messaging services, it is broader than the RBOCs. Only British Telecom, Sprint, and possibly NTT have similar breadth in voice and data.

- Large financial resources to draw from. Allows it staying power in slow-to-mature markets including EDI and electronic commerce.

- High-quality technology. AT&T's Bell Labs, which maintains EDI specialists, continues to be one of the world's premier advanced technology development centers.

- Inspired management. AT&T has been one of the most aggressive and successful telephone companies after the divestiture decree went into effect. It has reorganized itself to be more market-focused (for example, the creation of the EasyLink and Systems Integration groups) and has entered into new markets, especially computers (at first, unsuccessfully with its joint personal computer offering with Olivetti, but now successfully with its acquisition of NCR).

- Global communications player.
- Name recognition and goodwill.
- Owns its own network.

Weaknesses

- Hasn't reached its potential to integrate voice and data in integrated electronic commerce offering.

- Lacks vertical market expertise.

- Services are subject to regulatory approval.

- Bureaucratic structure and culture inhibit effective decision making and market responsiveness.

- Late to EDI market. AT&T has few EDI customers compared to GEIS, Sterling and IBM/Advantis.

4. Products, Services, and Prices

AT&T EDI service includes a value added network, a suite of EDI software products from leading EDI vendors, integration with AT&T interface software to ensure message and session compatibility and customer support services.

- *EDI Network Service*. The network service is based on AT&T Unified Messaging Architecture, designed for comprehensive integration of systems and applications. The service supports asynchronous terminals, personal computers, UNIX system processors, and a wide variety of host computers and local area networks. Prices for EDI and E-mail messaging on EasyLink are shown in Exhibit III-2.

EXHIBIT III-2

AT&T EasyLink Services Rate Summary

EDI Service Rates

These prices are valid for both IMS and GMS depending upon which network the feature is offered.

EDI Usage Charges	Prices Send	Receive
EDI Interchange, per address, plus:	$ .20	$ .20
1 - 3,000 characters, each character	$ .00015	$ .00015
3,000 - 10,000 characters, each character	$. 00010	$. 00010
10,001+ characters, each character	$ .00005	$ .00005
Off-Network*, each character	$. 00010	$. 00010
EDI Delivery Notification billed to sender (GMS only)	$ .25	
EDI Notification (EDIN) billed to sender, each (GMS only)	$ .25	

*Off-Network charges are in addition to normal send and receive charges and include interconnect, open-mailbox and dial-out delivery.

EDI Support Services

Service	Price
On Site Support, per day, per person	$ 1,000.00
Trading Partner Implementation Seminar	$ 5,000.00
Customized Trading Partner Implementation	
Innovator Program	$ 7,500.00
Enterprise Program	$ 25,000.00

EDI FreeForm Conversion℠ Service

Character conversion costs are **in addition** to normal send and receive.

Service	Price
Transaction set installation, per format	$ 500.00
Transaction set customization, per hour	$ 75.00
EDI Character conversion, per character	$ .0002
FreeForm functional acknowledgment, each	$ .25
FreeForm delivery	see FAX, E-mail, Telex, Mailgram rates

Source: AT&T EasyLink Service price list of February, 1992

EXHIBIT III-2 (CON'T)

AT&T EasyLink Services Rate Summary (Con't)

EDI Support Services

These fees are in addition to core service fees.

Service	Price
Service Installation Fee	
Asynchronous Account, one time fee	$ 50.00
Synchronous Account, one time fee	$ 150.00
Annual Subscription Fee billed on service anniversary date	$ 150.00
Monthly Mailbox Fee GMS	$ 3.00

EDI Storage (GMS)

Type of Storage	Price
Unread Messages	No charge
Read Messages	No charge up to 6 days
Log Storage, up to 1 meg	No charge
over 1 meg, per storage unit*	$ .30
Table Storage	No charge

* 7,500 characters = 1 storage unit

AT&T EDI Software (GMS)

Software	Price	Maintenance
EDI Network Interface Module/MVS	$ 2,500.00	$ 375.00/year
EDI 3780 Dial Out Utility	$ 2,500.00	$ 375.00/year
EDI Network Interface Module/UNIX	$ 500.00	$ 75.00/year

Pricing Help

The pricing information in this guide is effective February 1, 1992. Rates are subject to change on 30 days notice. Every effort was made to ensure that the information in this guide was complete and accurate at the time of printing. However, as prices are changed the most current prices will be reflected in the on-line help of each network.

IMS offers on-line rate information in the help file **help rates**.

Source: AT&T EasyLink Service price list of February, 1992

- *AT&T EDI Network Interface Modules*. With AT&T communication interface software, all messaging on the network, including EDI, is done using X400 protocols. X400 protocols (sometimes called envelopes) provide the AT&T network with routing and auditing capabilities. Software modules for UNIX, PC-DOS, MVS are available.

- *EDI Translation Software*. AT&T does not make its own EDI translation software. It turns to alliances with EDI software makers to provide its customers with this software. These alliances are listed in the alliance section below.

- *EDI Professional Services*. Out of its St. Louis office, AT&T offers support in the planning, development, and implementation of EDI. Services are contracted individually and range from basic executive briefings on the principles and strategic applications of EDI to on-site technical support for interface and connectivity issues. AT&T also provides customized implementation support for individual trading partners as needed, as well as coordinated group seminars for a customer and its trading partners.

5. Alliances

AT&T EasyLink has made alliances with the following software providers for EDI translation software: Supply Tech, Inc., Premenos, and EDI Solutions (all profiled in this report).

AT&T EasyLink has a strategic relationship with Microsoft. The two companies plan to integrate their current messaging products to enable remote and local area network-based computer users to access AT&T Mail.

6. Competitors

AT&T's competitors are of two types: telephone companies and value-added network services. The principal telephone company that it competes with is British Telecom, which offers voice services as well as EDI services. U.S. Sprint, MCI, and Cable and Wireless are additional international telephone companies that offer voice and EDI. Domestically, the RBOCs, especially Bell Atlantic and Ameritech, are phone companies that offer commercial EDI services. Principal value added network competitors are: Advantis, GEIS, Sterling Software, and Harbinger.

G

Bell Atlantic Corporation

1717 Arch Street
Philadelphia, PA 19103
(215) 963-6000

Company Total 1991 Revenues: $12.2 billion
Marjorie MacArthur, EDI Product Manager
1992 EDI Revenues: $2.25 million*
* INPUT estimate

1. Description of Principal Business

Bell Atlantic Corporation is one of the seven regional holding companies formed on January 1, 1984, when AT&T divested itself of its exchange telecommunications, exchange access, printed directory advertising portions of telephone company subsidiaries, and cellular mobile communications businesses.

Bell Atlantic's strategy is to become a leading international communications and information management company.

- The company is pursuing that strategy by focusing its resources on three key strategic businesses, both domestically and internationally—network services, wireless communications, and business systems such as software and systems integration.

- Management's objective is for wireless, international, and business systems businesses to generate 20% of Bell Atlantic's revenue stream in five years.

Bell Atlantic currently provides a range of services through two broad segments, as follows:

- The Communications and Related Services segment includes the Network Services (telephone) companies, as well as subsidiaries that provide wireless communications products and services, including cellular mobile and paging services; hardware maintenance services; customer premises equipment (CPE) to originate, route, or receive telecommunications; and software, systems integration, and professional services to various industries.

- Financial and Real Estate Services provides lease financing of commercial, industrial, medical, and high-technology equipment, other forms of financing, and real estate investment and development.

2. Description of EDI Offering

The most EDI-advanced RBOC, Bell Atlantic launched its EDI service, IntelliTrade, in December, 1990. The name fits in with its consumer-side videotext/E-mail service, IntelliGate. IntelliTrade is a combined software and network service offering.

Bell Atlantic is very explicitly pursuing a hub-and-spoke marketing approach. It is signing up large companies, then bringing up the company's many trading partners.

Bell Atlantic holds seminars for each hub company's trading partners explaining EDI and selling its EDI software. The seminars are free as long as the hub company can guarantee that at least 20 of its trading partners will show up (otherwise, the hub pays a charge). Bell Atlantic sells its software at a discount at the seminars because attendance, and thereby the EDI orientation received, results in fewer calls to the customer service desk at Bell Atlantic.

Bell Atlantic offers mapping services, customization of data formats, and assistance in setting up bar-code applications.

To date, customers of Bell Atlantic's IntelliTrade include: Bell Atlantic Purchasing, DuPont Fiber Division, and Crown Central Petroleum.

3. Markets Served

Product Manager Marjorie MacArthur stresses that IntelliTrade is not an offering to just those companies within Bell Atlantic's seven-state operating territory. It is being marketed nationally. Many of the trading partners of the companies already using IntelliTrade are, in fact, outside of the territory.

Nevertheless, Ms. MacArthur admits that most of the marketing resources are inside the territory, reflecting the focus of the company in general. Ms. MacArthur said that she "can anticipate" opening offices around the country someday in the future.

Users outside of the territory use a long distance carrier to reach IntelliTrade. Within the territory, transmissions can be sent over Bell Atlantic's packet data network.

Ms. MacArthur says she is looking into further EDI services. They are talking with a data base provider for a possible service offering.

4. Evaluation

Strengths

- Huge Network Capacity. Bell Atlantic's chief strength is that it controls the physical telecommunications infrastructure. Investing in the infrastructure, leasing it to other network providers, and leveraging and getting economies of scale by piggybacking with Bell Atlantic's voice and other data/image services are opportunities that only other telephone companies have.

- Provider of One-Stop Shopping for Telecommunication Services. Because Bell Atlantic's chief business and competence is voice communications, the company can combine its EDI and other data services with voice services in a single package, including network management, for an entire corporation.

- Deep Pockets. Bell Atlantic, as all telephone companies, is a cash-rich, annuity-type business, due to the steady use of telephone service by residential and corporate customers.

- Regulatory Environment is Opening. The regulatory environment that restricted the regional bell operating companies (RBOCs) from entering the information services business has been almost entirely removed.

- Uses Other EDI Software. Bell Atlantic's EDI service runs on software—both at the customer site and at Bell Atlantic's central switching center—that was developed by Harbinger Computer Services (Atlanta, GA). Bell Atlantic's outsourcing of this software development has enabled it to enter into the EDI business with less up front investment of resources than had it developed its own software.

Weaknesses

- Myopic/Restricted Market Field of Vision. The chief weakness of Bell Atlantic's EDI offering is its court-stipulated geographic territory of operation. The territory artificially constrains Bell Atlantic from serving corporate customers who, typically, have EDI trading partners throughout the U.S. and other parts of the world.

- Bureaucratic Inertia. The Regional Bell Operating Companies have been slow to shift from being a public monopoly to a market-driven, competitive company. The bureaucratic structure for decision making (in addition to regulatory restrictions) has hampered the speed at which the companies have been able to penetrate data processing markets, including EDI. Bell Atlantic suffers from this ailment, but possibly not as badly as some other RBOCs.

- Scattered Focus/Resources Diluted Over Wide Service Portfolio. A lesser weakness of Bell Atlantic is its attempt to play in several different communications-related markets, including cable television, consumer videotext, and EDI. While these forays/ventures are promising and are logical business opportunities for Bell Atlantic to pursue, they nevertheless can dilute its resources and keep the company from playing effectively in any one market.

5. Key Issues

In 1991, a series of court decisions allowed Regional Bell Operating Companies to provide information services. Previously they had been restricted from this business.

A number of RBOCs shied away from EDI services because internal legal counsel considered it too much of an information-type service. In particular, RBOC lawyers considered in-network format translation (for example, changing X12 purchase orders to UCS purchase orders) and protocol conversion (for example, dial-up asynchronous to SNA) to be manipulating data, thereby creating new data and not merely transporting data, which is all that was allowable. As such, they concluded that the company would be guilty of violating its restriction.

6. Products, Services, and Prices

Bell Atlantic resells Harbinger's PC-based software. IntelliTrade sells for $799 (or $999 if the buyer does not attend an orientation seminar). IntelliTrade+ also runs on a PC but, loaded with a mapping capability and program interface, is usable as a front end to mainframe applications. It sells for $1,399 (or $1,599 if no seminar is attended). Bell Atlantic has modified the Harbinger software somewhat (allowing customers, for example, to specify who the long distance carrier will be in the communications component of the software).

IntelliTrade's basic transmission charges are in keeping with the industry norm: twenty cents per thousand characters.

7. Alliances

Bell Atlantic obtained a license from Harbinger Computer Services (Atlanta, GA) to resell, under its own label, customer-premise EDI translation software and the switching software that runs at Bell Atlantic's center.

H

Birmingham Computer Group, Inc.

30850 Telegraph Road
Suite 250
Birmingham, MI 48009
(313) 540-0640

Charles S. Townsend, President
Private Company
Total Employees: 15
Total Revenue, Fiscal Year End 6/30/91: $720,000*
*Estimate

1. Description of Principal Business

The Birmingham Computer Group (BCG) was formed in 1984 from a consolidation of Phoenix Data Systems and Townsend Management Systems. BCG provides software products, consulting, and implementation services.

- Software products offered include accounting, order entry, electronic data interchange (EDI), and MRP (Material Requirements Planning) applications.
- BCG is privately held and has no interconnecting ownership.

2. Markets Served

BCG targets automotive, mass retail, electronics, aerospace, and warehousing operations. BCG distributes its products and services throughout the U.S., Canada, and Mexico. The company plans to expand further internationally. BCG sells both directly to its customers and through its strategic alliances with various MRP and warehousing application providers.

3. Evaluation

BCG has consistently done well in the automotive industry. It is a small EDI software vendor and concentrates on providing service to its customer base. It will not grow into a major EDI market player.

4. Products, Services, and Prices

Approximately 90% of BCG's fiscal 1991 revenue was derived from EDI software products. The remaining 10% was derived from accounting, MRP, and bar code labeling software products.

The Automotive Release System (ARS) enables suppliers to the auto industry to accept, monitor, and schedule production orders from automobile manufacturers, with the added capability of scheduling and tracking shipments for a just-in-time (JIT) inventory system. ARS is available as a standalone system for microcomputers, as a front-end processor for mainframes, or as a resident application for manufacturing programs for Hewlett-Packard HP3000, DEC VAX, and UNIX minicomputers.

The DOC-U-MAP System is a pure translator of variable-to-fixed record formats. As such, it is applicable to any industry EDI application using TDCC, WINS, UCS, ANSI X12, or EDIFACT formats.

- In addition to being table-driven, DOC-U-MAP can produce up to ten different fixed user-defined record layouts during one reading of the variable input files. These output records can be defined to parallel the data organization of an existing application data base.

- In addition to reorganizing data, DOC-U-MAP can filter, default, convert, and calculate data element values. These features reportedly remove up to 90% of the programming effort previously required to integrate the transactions into an internal application.

- DOC-U-MAP is available on Hewlett-Packard, DEC, UNIX, and PC-DOS systems.

I

Blue Rainbow Software International Corporation (U.S. Division)

Suite 330
1899 Powers Ferry Road
Atlanta, GA 30067
(800) 258-3433

Hans Plotzeneder, President, U.S. Operations
Privately Held
Employees: 42 worldwide
1992 Worldwide Revenue: $6 million*
* INPUT estimate

1. Description of Principal Business

Blue Rainbow, founded and headquartered in the United Kingdom, is the leading supplier of midrange EDI translation software in the U.K. While its EDI and E-mail messaging software runs under UNIX, Sun/OS, IBM OS/2, Microsoft Windows, and IBM AIX X-Windows operating systems, its principal platform is the IBM AS/400.

Two of the largest EDI network service providers in Europe, IBM Information Network and GE Information Services, resell Blue Rainbow's EDI software and put their own private labels on it.

In 1992, Blue Rainbow established a U.S. operation headquartered in Atlanta, GA. Through this office it hopes to attack the largest EDI marketplace in the world. Blue Rainbow has offices in Seattle, WA; Montreal, Canada; Sydney, Australia; Hong Kong; and South Africa.

2. Markets Served

Blue Rainbow, through reseller agreements and through direct sales, is targeting small and mid-sized businesses across industries in the U.S. and in the U.K. It intends to establish distribution channels in Asia and Latin America.

3. Evaluation

Blue Rainbow's product portfolio is well diversified among the two largest segments of EDI software, micro and midrange computers. EDI software for midrange systems is growing relatively faster than micro or mainframe segments because this platform is the most popular among the mainstream EDI user industries (manufacturing, distribution, and transportation).

Providing micro and midrange software allows Blue Rainbow to take advantage of users either downsizing their EDI function (from mainframes to midrange computers, or from midrange to micros) or upgrading the function (from PCs to midrange computers). INPUT has found that more than half of EDI users replace their original EDI software at least once.

Blue Rainbow's E-mail/message handling product further positions the company as a complete messaging solutions provider to the user. Integrated E-mail, EDI, and other message gateway services (facsimile, voice response, paging, etc.) will become a major software segment in the mid-nineties as users seek to provide a single, comprehensive electronic message gateway in and out of their organizations. Premenos (Concord, CA), Blue Rainbow's principal competitor, has also introduced an E-mail/ messaging product.

Blue Rainbow's U.S. strategy appears to be one of distributing its products through reseller agreements and, through its own sales force, be the low-priced provider of midrange software.

Through alliances and key recommendations, Blue Rainbow is well established in the U.K. EDI marketplace. It wants to duplicate this in the U.S. marketplace.

4. Products, Services, and Prices

Blue Rainbow has two software product offerings: (1) a series of translation software packages designed to run on different hardware platforms and (2) an E-mail management system designed to run on IBM AS/400 computers.

The MULTINET series is translation software.

MULTINET/400 runs on IBM AS/400 computers and is priced from $14,000 to $28,000.

MULTINET/UNIX runs in IBM AIX and other UNIX environments. The package features point-and-click data mapping.

MULTINET/PC runs on IBM and IBM-compatible MS-DOS personal computers utilizing the Microsoft Windows graphical interface. The package features point-and-click data mapping.

MULTINET/2 runs on IBM personal computers that run the OS/2 operating system.

Features of the MULTINET series of translation software include: a facility by which users can manage the characteristics of their trading partners; support for multiple standards and versions of standards; communication modules that connect to major commercial and private networks; job stream scheduling; store-and-forwarding of messages; event-driven as well as batch transmissions; audit facilities; security.

Messenger is an E-mail message management system that runs on IBM AS/400 computers. It has gateways to LANs (Novell, Banyan, Microsoft, and IBM), public E-mail networks (MCI Mail, CompuServe, GEIS' QuikComm, AT&T EasyLink, Internet), facsimile and telex machines, paging systems, Digital Equipment Corporation mail systems, Apple Quickmail, IBM's OfficeVision, other host hardware systems (DEC, Tandem, Apple, Wang, Data General, Hewlett Packard, and IBM mainframes) and can send and receive X400 messages.

5. Alliances

Blue Rainbow has reseller agreements with Ameritech, GEIS, and IBM IN in Europe. It is an IBM Business Partner in the U.S.

6. Competition

Blue Rainbow's chief competitor is Premenos (Concord, CA). System Software Associates is expected to also give them competition once SSA ramps up its marketing efforts.

J

BT North America, Inc.

2560 North First Street
San Jose, CA 95131
(408) 922-0250

Mark Baker, President and CEO
Wholly Owned Unit of British Telecom
Total Employees: 3,000
Total Revenue, Fiscal Year End 12/31/92: $675 million*
*Pro forma estimate

1. Description of Principal Business

BT North America is the value-added network and processing services division acquired by British Telecom Plc. (based in the U.K.) in 1989 from McDonnell Douglas. Primarily serving the U.S., BT's network reach spans the U.S. and parts of Europe to form a single integrated administrative domain. Users anywhere in the domain are charged a single transmission rate, independent of distance. Network application services include electronic messaging, electronic transaction (card) services, and electronic data interchange (EDI). Additionally, the company currently offers international voice, integrated trading and data communications equipment, optoelectronics products, and voice messaging products and services. These products and services were previously offered through British Telecom, Inc.

BT North America's parent, British Telecom, operates one of the largest communications networks in the world, has an annual revenue of over $23 billion, employs about 218,000 staff, and has over 100 offices in 30 countries. BT offers international value-added data services to 107 countries (23 directly) via its Global Network Service and intends to expand coverage over the next few years to 39 new countries (19 in Europe, 8 in Pacific Rim, 7 in the Middle East, and 5 in Africa).

BT North America's current operations support all of the Tymnet network products and services for shared, hybrid, and dedicated customer applications, Dialcom and OnTyme electronic messaging, EDI*Net[R] electronic data interchange services, and Payment Systems' card authorization, point of sale, and electronic draft capture services.

BT North America currently has approximately 3,000 employees, of which 1,800 are in the U.S. and 1,200 at international locations.

INPUT estimates that BT North America's total 1992 pro forma revenue reached nearly $675 million, which includes approximately $300 million from BT Tymnet operations, $100 million from British Telecom, Inc., and about $300 million from PSS and IPSS operations.

2. Markets Served

EDI*Net clients are predominantly in the transportation, grocery, electronics, telecommunications, aerospace, oil, and warehousing industries. There are currently over 1,000 EDI*Net clients.

Approximately 63% of BT North America's $675 million 1990 revenue was derived from the U.S. and 37% from international sources.

3. Evaluation

Strengths

Total Solutions Provider. BT North America, along with its telephone parent company, can offer customers voice and data services all under a single contract and bill.

International Reach. BT is stronger in international reach for value added network services than IBM, GEIS, EDS, and certainly Sterling Software. Its only competitors that provide customers with such extensive reach are AT&T and NTT (Japan).

Portfolio of Other Electronic Commerce Offerings. Its point-of-sale (credit card processing) applications and E-mail demonstrate the diversity of services it offers. Point-of-sale (POS) support is an increasingly important conjoint with EDI because POS data can serve to create merchandise purchase orders.

Weaknesses

Bureaucratic stultification and internal conflict. BT has distanced itself from customers and strategic partners due to internal turmoil. The BT North America unit is still having difficulty integrating with the parent company, it seems. Consequently, it has not kept in front of its marketplace and suffers from a fading identity.

4. Products, Services, and Prices

EDI Services

The principal EDI service, EDI*Net®, is a third-party, value-added communications service for computer-to-computer exchange of such business documents as purchase orders, invoices, and bills of lading. EDI*Net supports all public exchange standards (including ANSI X.12 and EDIFACT), various industry-specific standards, and offers asynchronous, bisynchronous, and leased-line access.

BT North America does not provide EDI software. Formerly, it recommended software vendors through a certification program which it is in the process of discontinuing in favor of alliances with selected vendors.

Related Electronic Commerce Services

Electronic Mail

BT North America's Dialcom electronic mail service allows users to create, read, distribute, and file messages electronically and instantly, 24 hours a day, worldwide. Dialcom products/services include:

- XMAIL, which allows users to send both domestic and international messages directly from electronic mailboxes to fax machines
- UpFront, a PC communications software product with word processing, messaging, and file management capabilities
- NEWSTAB, an electronic newswire clipping service
- FORMS, for custom electronic forms design
- EPUB, an electronic publishing service
- Dialcom 3780 service, a batch mail service

Card Services

Card services provided by BT North America include credit card authorization, electronic draft capture, and related services at electronic point-of-sale terminals across the U.S. These services generated an estimated $40 million in 1990.

- Authorization services are provided for all major credit cards, including VISA, MasterCard, American Express, Discover, Diners Club, Carte Blanche, and private label card programs.
- A related service, electronic draft capture, electronically captures credit card transactions for later transmission to the merchant's bank and enables the bank to process card sales electronically, rather than with paper drafts.
- Card processing services are supported from data centers in Irvine and Fremont, CA, and Rockville, MD.
- Card services are currently provided to over 500 banks.

Private and Hybrid Data Networks

BT North America also provides private and hybrid data networks and associated support services. These services contributed an estimated $50 million to 1990 revenue.

Global Network Services

In September 1990, British Telecom launched its Global Network Services (GNS), a portfolio of network management services providing users with network access to over 90% of the world's business centers and over 101 countries.

GNS is a further phase of British Telecom's corporate strategy to provide the multinational business community with communications on a global scale, together with management services, through a single customer interface.

GNS integrated the TYMNET network, the PSS network (British Telecom's X25 packet network in the U.K.), and IPSS (British Telecom's International Packet Switching Service).

5. Competition

Value-added network providers: Sprint International, CompuServe, INFONET, GE Information Services, and IBM Information Network

Packet-switch equipment vendors (private networks): Bolt Beranek and Newman, Sprint International, and Northern Telecom

EDI services providers: AT&T, GE Information Services, Sterling Software ORDERNET, and IBM Information Network

Card services: National Data Corporation, MasterCard, VISA, and American Express

Electronic messaging: Sprint International, AT&T, GE Information Services, MCI, and INFONET

6. EDI Alliances

BT has formed relationships with Blue Rainbow Software International for midrange EDI software and Information Associates to market EDI services to the education sector. EDI, Inc. has some kind of relationship with BT (possibly only through the Information Associates relationship; Information Associates resells EDI, Inc.'s software).

7. Strategy

BT NA sees advances in public network security, outsourcing, distributed computing, demands for intercompany communications, and the increasing complexities of managing large-scale multinational networks as key contributing factors in the migration from private networks to public networking environments.

K

Datacom Inc.

146 Highway 34, Suite 250
Holmdel, NJ 07733
(908) 946-1661

Robert M. Bingham, Executive Director
Employees:
1992 Revenues: $1 million* worldwide
* INPUT estimate

1. Description of Principal Business

Datacom Inc. designs and manufactures EDI software for microcomputers. Datacom's 16-bit character set software allows it to accommodate Kanji, Chinese, and Korean characters. It is selling in the East Asian markets.

2. Markets Served

Datacom's EDI software accommodates Korean, Chinese, Japanese, and German characters making it geared for non-English, particularly Asian, EDI users. Datacom has a contract to provide the Korea Trading Network (KT-Net) with 20,000 installations of its software by 1995. Its software is being distributed in Taiwan through an agent.

3. Evaluation

The company's principals (and perhaps funding) come from Taiwan and have strong connections with Asian markets (particularly Hong Kong, Korea, Taiwan, Japan, and possibly China).

The company's Asian-language product goes unchallenged at this moment. However, the market for ideographic EDI translation is very small, is just now beginning to come into existence and will take longer to develop than the English-based EDI market (which is slow to begin with). Computerization of commercial procedures where ideographic language processing is required hasn't happened. Fax machines are more prevalent in Japan than Kanji word processors, for example.

Nonetheless, Asia, after the U.S. and Europe, is the next region where EDI will develop (it is already doing so in Singapore) and Datacom appears to have taken the lead in EDI software for non-Roman languages.

4. Products, Services, and Prices

EDI-Answer runs on DOS, Novell, UNIX, and IBM AS/400 environments. Transaction sets and network communication are sold in modules.

L

Digital Equipment Corporation

EDI Group
10 Tara Boulevard
Nashua, New Hampshire 03062-0000
(603) 884-5111

EDI Contacts:
Kurt Andersen, EDI Marketing Manager
Mark Hayward, EDI Marketing Manager
Worldwide EDI Revenues: $1.5 million*
*INPUT Estimate

1. Description of Principal Business

Digital Equipment Corporation (DEC), founded in 1957, is one of the world's largest suppliers of networked computer systems, software, and services and is a leader in multivendor systems integration. As an international company, Digital does more than half its business outside the United States, developing and manufacturing products for customers worldwide.

DEC launched its first EDI product, VAX/EDI, a translation software package, in the United Kingdom in 1988. In 1990, it released DEC/EDI, EDI translation software that runs in DEC environments. Since the launch of these software products and with the express shift in corporate strategic intent, DEC is offering EDI professional services and systems integration services to companies.

2. Markets Served

DEC is approaching large companies with multivendor environments in the U.S. and abroad. Its current installed base of 200+ DEC/EDI users is split approximately 50-50 between the U.S. and 25 other countries, with a large proportion in the U.K.

3. Evaluation

Strengths

Good technology.
Deep pockets.

Related Software Products. Its TeamLinks workflow, network management, and many other software products give DEC a significant edge over competitors in providing full solutions to customers.

Weaknesses

Slow to market.
Premium priced.

4. Products, Services, and Prices

DEC/EDI is Digital's EDI translation software. It is now in its second release (version 1.2). It runs only on Digital Equipment computers and is priced according to CPU. Prices start at $10,000 for the 3100 class machine and go up to $90,000 for the VAX 9000 class machine. Average price is typically in the $25,000 to $50,000 range. DEC/EDI consists of three software components that can be distributed across a network where needed: DEC/EDI Application Server, DEC/EDI Translation Server, and DEC/EDI Communications Server.

In line with Digital's network computing superiority, DEC/EDI is built around a client-server concept with a high degree of network management support. Auditing, tracking, and other network management capabilities are built into DEC/EDI. Also, DEC/EDI interfaces with DEC's MAILbus message transport service so that EDI and E-mail can move within the enterprise and between enterprises in the same X400 format.

DEC/EDI is configured with the major ANSI, EDIFACT, and TRADACOMS EDI message formats. It handles X400 messaging as well as the protocols of major EDI VANs including AT&T, AT&T Istel, BT North America, GEIS, MCI Mail, Telecom Canada, Atlas 400, IBM/Advantis, Sterling Software Ordernet, Harbinger*EDI Network, Wal-Mart, INS TRADANET, and U.S. Sprint Telemail.

FileBridge for DEC/EDI acts as the interface between business applications and DEC/EDI, providing the mapping between the (DEC-resident) application and DEC/EDI. FileBridge for DEC/EDI software pricing is based on VAX system size and begins at $11,500.

HostBridge for DEC/EDI Application Services supports integration of client applications that run on any IBM System/370 and System/390 processor capable of running MVS or VSE, with any VAX/VMS-based processor running DEC/EDI and FileBridge for DEC/EDI software. HostBridge provides MVS-CICS client and VAX/VMS server HostBridge for DEC/EDI software, installation and configuration of the software, documentation, customer orientation, and the successful interchange of EDI documents.

HostBridge for DEC/EDI Application Services is priced from $36,000 for the VSE environment and from $44,000 for MVS environments.

EDI Consulting and Systems Integration Services. Digital offers businesses a series of consulting and systems integration services. EDI Design Services analyze alternative solutions for implementing EDI. EDI Implementation Services provide customers with a detailed EDI implementation and roll-out plan. EDI Management Services provide training and support for the customer's staff and can also include evaluation and support services for trading partners. Digital has joined with Price Waterhouse and Coopers & Lybrand in the U.S. to offer customers EDI consulting and systems integration services.

5. Alliances

DEC/EDI is a component of Digital's Network Application Support (NAS), allowing developers to easily integrate their applications with DEC/EDI. Vendors using NAS are part of DEC's Cooperative Marketing Partners, where the vendor can resell DEC's EDI software. Among the vendors currently using NAS to integrate their products with DEC/EDI are: Andersen Consulting, ASK, ASA International, Calidus, CINCOM, CODA, Computron, DIScorp, Distribution Architects International, G.C. McKeown, GSI Transcomm, Fraser Williams, Mancos, Mitech, Ross Systems, Shared Medical Systems, VISTA.

M

DNS Associates, Inc.

6 New England Executive Park
Burlington, MA 01803-5080
(617) 272-4252

Hugh W. Stewart, President
Private Company
Total Employees: 16
Total 1992 Revenue: $500,000*
*INPUT estimate

1. Description of Principal Business

DNS Associates, founded in 1978, provides EDI software development and consulting services to all industries. Originally formed to provide consulting services to transportation companies and users, the company still provides computer network modelling primarily to the rail industry.

The company's strategy remains directed at those organizations promoting EDI among their suppliers and customers through Trading Partner Expansion Programs.
In addition to its 16 full-time employees, DNS also has outside associates available for specific customer requirements.

2. Markets Served

DNS was founded on a large contract for a major U.S. railroad. Today it offers EDI software to all industries but has an industry expertise in the transportation sector. EDI clients are varied and include BC Rail, Ltd; E.I. duPont de Nemours & Company; Whirlpool Financial Company; The Pillsbury Company; Commonwealth Bank of Australia; and the Australian and New Zealand governments.

DNS markets worldwide through distributors and domestically through direct sales. It has customers in Brazil, Australia and New Zealand.

The company is headquartered in Lexington (MA) and has sales offices in Philadelphia (PA), Minneapolis (MN), and San Diego (CA).

3. Evaluation

Strengths

Alliances. The company has leveraged its otherwise small capacity through key strategic alliances, especially with IBM and the Australian distributors.

Weaknesses

Single-product technology provider. DNS is one of many small, privately owned EDI software providers. Customers who purchase DNS software must already know EDI. DNS is unable to provide full electronic trading solutions and cannot "sell high," only to low level MIS directors.

4. Products, Services, and Prices

The company derives 80% of its revenue from EDI software and related services. The remainder of revenue is derived from other consulting services in the transportation industry.

EDI/Edge: $2,500. Full-function EDI translation software that includes most of the key X12 and TDCC transaction sets. The product is available for IBM PC, PS/2, and compatibles; DEC VAX; and UNIX systems.

EDI/Edge includes five major components:

- *User Interface* allows documents to be created, stored, retrieved, printed, and transmitted. A variety of aids, including table lookups and data type checks, are available to assure accurate input.

- *Files* stores transactions and connects to EDI communications to transmit and receive information electronically. The Files system also has provisions for backing up data and purging old completed transactions.

- *Forms* permits the creation and storage of custom-designed forms using the specific items required in a format compatible with existing operations.

- *EDI Communications* handles both transmission and receipt of EDI transactions. This system runs in a "background" mode so communications can occur simultaneously with other operations. When transmission is initiated by a trading partner, the EDI/Edge workstation is able to receive the information unannounced.

- *Print* provides a paper copy so the same system can also produce documents for non-EDI trading partners. A physical paper record may also be required for approval signatures and for departments operating in a paper environment.

DNS Associates also provides modifications to EDI/Edge software, consulting services for forms design, and custom software development—as well as services such as telephone support, the EDI/Edge Newsletter, and the EDI/Edge user group.

- A recent modification to EDI/Edge for a railroad places the software at a central site for directly receiving inbound messages, so that the software acts as a front-end workstation to upload received messages and download pending outgoing messages from the corporate mainframe.

EDI Entry: $1,800. Pre-outfitted by DNS for a specific hub's spoke companies (for example, Anheuser Busch's trading partners). EDI Entry is a scaled-down version of EDI Edge, custom fitted for a specific trading community.

Fast EDI: $495. Basically a receive-only EDI product.

5. Alliances

DNS has OEM relationships with several organizations, including IBM/Advantis (which resells Fast EDI under its own label), Martin Marietta, three international trade software vendors, two networks that use EDI/EDGE for on-line translation, and a banking software developer.

N

EDI Able, Inc.

20 Valley Stream Parkway, Suite 140
Malvern, PA 19355
(215) 644-1231

Michael Eckstein, CEO
Private Company
1992 Revenues: $1 million*
*INPUT estimate

1. Description of Principal Business

EDI Able, formerly named FoodCom, provides EDI and E-mail network services, data base support, and microcomputer EDI software. It provides processing services in the health care insurance claims business for Shared Medical Systems and Blue Cross insurance carriers. The company was founded in 1982.

2. Markets Served

EDI Able was originally launched to provide EDI and EDI-like solutions for small food distributors and manufacturers. Its largest customer base remains food distributors. EDI Able wants to expand to become a general provider of EDI services (hence its name change in 1991). It is targeting the retail, health care, insurance, petroleum, and chemical industries.

3. Evaluation

Strengths

Captive customer base/niche. EDI Able has a loyal customer base of food brokers, as well as contract work in insurance claims processing.

Integrated software and services offering. The company introduced an inexpensive, PC-based EDI software package. It allows EDI Able to sell network services to a hub company's trading partners. Successful EDI VANs have used this strategy.

Weaknesses

Small player/limited resources. The company is small and is unable to compete with full electronic commerce solution providers such as GE Information Services, Advantis, AT&T EasyLink, and Sterling Software in providing customers with customized, comprehensive, industry-oriented solutions.

4. Products, Services, and Prices

The company provides store-and-forward network services for transmitting EDI and E-mail messages.

The company also sells a microcomputer EDI software package: FrEDI (pronounced "Freddy") and a scaled down version of it called Fast/FrEDI.

Fast/FrEDI is designed for the EDI user who needs to be EDI capable to trade with a single important customer. EDI Able equips the package with the appropriate transaction sets and trading partner information. The package is not integratable with the user's other software applications.

FrEDI is an integratable microcomputer based EDI software package. It can be a standalone EDI message receiver or a front-end to mainframe, midrange, or PC software applications.

O

EDI, Inc.

19650 Club House Road
Gaithersburg, MD 20879
(301) 670-0811

L. Dale Sortland, President
Private Company
Total Employees: 32
Total Revenue, Fiscal Year End 12/31/91: $2.5 million*
*INPUT estimate

1. Description of Principal Business

EDI, Inc. was formed in January 1982 by individuals active in the Transportation Data Coordinating Committee, the industry trade association most responsible for the promotion of EDI concepts. The company's goal was to develop and market EDI software.

During 1983 and 1984 the company installed six pilot systems under the sponsorship of the National American Wholesale Grocers Association (NAWGA). These initial installations served as beta test sites for product refinement and further development.

EDI, Inc. formally entered the EDI market in January 1985 with the introduction of TELINK. Since then, EDI, Inc. has developed variations on this TELINK product, including versions suited for banking, the Tandem Guardian operating system, a transportation tariff transaction set used by the military, the Unisys version of UNIX, and a user-entry version.

2. Markets Served

EDI, Inc. has customers in the banking, government, grocery, manufacturing, retail trade, transportation, and warehousing industries. TELINK now has an installed base of over 1,400 worldwide. The company sells directly to users and through distributors. EDI, Inc.'s 1,900 users are in the U.S. and Canada.

3. Evaluation

Strengths

Name recognition and goodwill. Being one of the first commercial EDI software companies, EDI, Inc. has had the benefit of being recognized by many. Its principals are "pioneers" in EDI and have been able to leverage their contacts to attain lucrative contracts and reseller alliances.

Weaknesses

No apparent strategy or development of technology. While EDI, Inc. has customized its products to some extent, it has not ventured into developing additional products.

Lack of sales force. EDI, Inc. has not been present in bid situations. It seems to prefer reseller agreements rather than direct sales.

4. Products, Services, and Prices

TELINK, $2,600 plus $300 per transaction set. The annual maintenance fee is $750 for standards, software, documentation updates, and hotline services. Runs on MS-DOS-compatible machines. Supports ANSI X12, UCS, WINS, and TDCC (Air, Motor, Ocean, Rail) standards.

TELINK/lite, $1,595, includes one VAN interface and the first year's customer support. An entry-level EDI system, it allows users to create templates on the screen and to enter data directly from pop-up windows, and it features simplified document handling.

Tandem TELINK, introduced in May 1988, is a mainframe software product based on Tandem architecture. The TELINK implementation for Tandem computers consists of nine modules:

The *Monitor* module provides the operator interface and control mechanism. Processes can be initiated, suspended, or stopped. Status information concerning past or current activities can be retrieved.

The *Host Interface* module provides the gateway for moving fixed-record data files between the application systems and TELINK.

The *Control* module maintains an information base of data files in the system and acts as a traffic scheduler between the Host Interface module, the EDI translation modules, the Mailbox module, and the Communications module.

The *EDI Generator* module controls the translation from fixed record files to the Interchange Standard.

The *EDI Interpreter* module controls the translation from the Interchange Standard to fixed record files.

The *Mailbox* module controls the distribution of EDI-formatted data and proprietary formatted data to the appropriate trading partner.

The *Communications* module controls the allocation of physical devices and assigns the appropriate Device module to each. This module also controls the scheduling of communications sessions if required.

The *Device* module(s) is responsible for the physical movement of data files from TELINK to the trading partner over external communication lines. If required, incoming partner identification information is assigned to the Security module for analysis and validation.

The *Security* module is responsible for validating trading partner information and returning to the Device module instructions to accept the trading partner or to terminate the communications session.

In 1988, the company received a development grant from Unisys to implement TELINK on Unisys systems with the UNIX operating system. The system supports OSA (Open Systems Architecture).

In March 1991, EDI, Inc. released TELINK/osa, which has been designed for UNIX environments and is now available on the Unisys U6000 series system.

During 1991, EDI, Inc. also introduced TELINK/602, a specialized product designed to help carriers automate the process of generating a Tender Offer for the U.S. Military Traffic Management Command (MTMC). TELINK/602 uses artificial intelligence to assure data accuracy and to ensure compliance with the specifications of MTMC.

5. Alliances

Tandem, Taiwan Telecommunications Company, U.S. Sprint, Unisys, and others.

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EDI Solutions, Inc.

Minnesota Center, Suite 1140
7760 France Avenue South
Minneapolis, MN 55435
(612) 831-9000

Dee Thibodeau, President
Private Company
Total Employees: 18

1. Description of Principal Business

EDI Solutions, Inc. makes EDI translation software that runs on mainframe, midrange, and workstation computers. The company was one of the first mainframe EDI translation software manufacturers. It traces its roots to York & Associates, founded in 1980 as an MIS consulting firm. In 1984 a Fortune 100 firm commissioned York & Associates to develop a mainframe-based EDI translation software system. Following the successful installation of this software, the company decided to market the software to other Fortune 500 companies. In 1986 EDI Solutions, Inc. was formed to respond to the EDI marketplace.

In 1992, Maersk Data U.S.A., a corporate family member of the Danish shipping line, purchased an undisclosed, minority share in EDI Solutions. Maersk Data U.S.A. is a member of the Danish conglomerate, A.P. Moeller Group, a privately held corporation that has interests in shipping, oil exploration, and retail and purportedly accounts for 75% of Denmark's gross domestic product.

2. Markets Served

Market focus includes Fortune 1000 companies in a variety of industries including automotive, chemical, electronics, apparel, metals, retail, paper, lumber/building products, and consumer durables. One hundred percent of the company's revenue derives from the U.S., Canada, and Mexico. Future plans include expansion into Europe and the Pacific Rim. Existing agreements involve installations there. In addition to its corporate headquarters in Minneapolis, EDI Solutions has an office in Los Angeles.

3. Evaluation

Strengths

Relationship with Maersk Data. The minority equity position that Maersk Data owns in EDI Solutions guarantees financial security for the near term and raises interesting possibilities for business development in the longer

term. Will Maersk Data (with operations in Europe, Japan, and the U.S.) become a full-fledged commercial EDI value-added network and offer EDI Solutions software to its customers? Already, Maersk Data processes EDI for commercial customers in addition to EDI for Maersk shipping and other operations of the parent company, A.P. Moeller Group (Denmark). Maersk shipping line uses EDI Solutions' product. Maersk has stated that its joint venture with EDI Solutions is a technology transfer arrangement more than anything else. Nevertheless, having Maersk offer EDI VAN services would certainly allow EDI Solutions to expand its offering to customers.

Good Technology. The EDItran package, along with its mapper software, has received good marks from users. The package has real-time capabilities, which users are beginning to ask for. INPUT expects the product to be further enhanced and developed through the stimulus from Maersk.

Financial Backing. Even prior to the Maersk joint venture, EDI Solutions appeared to have a solid line of credit through the York & Associates group.

Weaknesses

Marketing/Sales Inertia. EDI Solutions has lost some of its former momentum as a leader of EDI translation software. It has fallen off in its ability to attract key accounts.

4. Products, Services, and Prices

EDItran: EDI Solutions' key product. Operating environments supported: IBM mainframe computers (MVS, MVS/XA, SE, and VSE/SP), AS400, HP 3000 and 9000 (UNIX), DEC VAX/VMS, RS6000 UNIX, Sun UNIX, and Stratus VOS. EDItran[R] is priced from $34,900 for the mainframe version to $18,900 for the minicomputer version. EDI Solutions offers on-site installation and training (two days) at no additional charge. Annual maintenance fees are $4,700 and $2,500 for the mainframe and minicomputer versions, respectively. EDItran[R] supports ANSI X12 and its subsets including AIAG, TCIF, VICS, CIDX, EDX, API, EIDX, and TDCC (Motor, Rail, Air, Ocean), WINS, UCS, and EDIFACT.

EDIfast: High-end product that supports event-drive translation (under CICS mode) and high-volume EDI transmission. Requires MVS and CICS 1.7 or higher.

EDImap: Mapping tool included with EDItran. It runs on a PC and generates structured, efficient, and complete ANSI standard COBOL subroutines that are integrated into the translator's processes.

5. Alliances

The company has market agreements with AT&T, Sprint International, and Shared Financial Services. It has strategic partnering agreements with other EDI product/services providers, application providers, computer hardware vendors, and providers of complimentary products such as data communications. Notable relationships include Hewlett-Packard, Stratus Computer, Distribution Resources Company, and ASK Computer Systems, Inc.

Q

Electronic Data Systems Corporation

7171 Forest Lane
Dallas, TX 75230
(214) 604-6000

Lester M. Alberthal, Jr., Chairman, President, and CEO
Wholly Owned Subsidiary of General Motors Corporation, GM Class E Stock, NYSE
Total Employees: 61,000 (12/90)
Total Revenue, Fiscal Year End 12/31/90: $6.1 billion
Non-GM Information Services Revenue: $2.8 billion

1. Description of Principal Business

Electronic Data Systems Corporation (EDS), founded in 1962, is a leading information and communications services company providing information processing, consulting, systems management, systems integration, and communications services to the financial, insurance, commercial, and communications industries domestically and internationally and to state and federal government. These markets include banking; credit unions; property, life, health, and casualty insurance; distribution; manufacturing; transportation; retail; and energy.

- EDS currently has 66,000 employees and more than 7,400 clients in all 50 states and 28 other countries.

- EDS' largest client is General Motors Corporation (GM) and its subsidiaries, which contributed approximately 53% ($3.23 billion) to EDS' 1990 revenue.

EDS, acquired by GM in October 1984, operates as an independent subsidiary of GM. EDS' performance forms the base from which any dividend on the GM Class E common stock will be declared. These earnings include income earned from services provided to GM and its other subsidiaries.

EDS' main EDI business is related to General Motors, where approximately 150 GM plants are using EDI in varying degrees. The EDS network processes approximately 500,000 kilocharacters per month for GM.

At present, the 100 or so EDI professionals in EDS don't sell directly to outside companies. They work with Strategic Business Units within EDS that market to vertical industries themselves.

Also, EDS offers EDI indirectly as EDI can often be a component of a larger outsourcing contract. An example here is EDS' contract with Kmart.

2. Markets Served

EDS is a major IS provider across almost all industries. However, in EDI it is principally focused on GM's business, petroleum, and retail.

For all of EDS, its activities by industry are addressed via 39 strategic business units. The chart below separates EDS' revenues by current major business segments.

EXHIBIT III-3

Electronic Data Systems Corporation
Source of Revenue by Industry Group

Industry	Percent
Manufacturing	40
Financial	14
Government	10
Insurance	5
International	18
Other	13

3. Evaluation

Strengths

Full Solution Vendor. EDS' offerings in software, network services, professional services (including industry expertise), and processing services allow it to provide a given customer anything it might need (except voice).

Outsourcing Expertise. EDI and outsourcing have a lot of synergies and large EDI customers are asking that EDI services be included in total outsourcing contracts. This trend benefits EDS since it is one of the premier outsourcing companies in the world.

Large Financial Resources.

Weaknesses

Too customer driven. EDS is often reluctant to develop new products without a direct contract to do so. It has lagged in the EDI business, where it could have been a premier EDI provider today if it wanted to be, because of its hesitation to go beyond immediate client needs. This cultural sense may keep EDS from being a major EDI player in the future.

4. Products, Services, and Prices

a. EDI Product and Service Offering

EDI Translation Software

EDI*Asset: a PC-DOS translation software package that EDS Canada developed for GM suppliers in Canada. Currently installed at approximately 800 locations.

EDI*Expert: a UNIX package that was designed specifically for Sun Microsystems workstations.

EDS*Aim: an MVS package.

EDS also acquired microcomputer and mainframe translation software packages when it acquired the French systems integration company, SD-Scicon, in 1991. EDS also resells Trinary Systems' EDI translation software, which runs on Digital and Hewlett-Packard computers.

EDI Network Services

EDS*Net has approximately 450 access points in the U.S. and others in 130 countries around the world. The SNA-based network can receive messages from X25 networks. In addition to EDI transmissions, EDS*Net supports a wide variety of customer networking needs including EFT and file transfer services. Through EDS*NET, over 730 million transactions are processed each month—nearly 17,000 transactions per minute.

b. Related Electronic Commerce Services

Cable television billing services: In October 1991, EDS acquired the assets of Creative Software Systems, Inc. (CMS) of Toms River (NJ). CMS provides information management services to the cable TV industry, including subscriber and financial management systems, bill processing, and mailing services. CMS serves more than 150 multiple-system operators and independent operators worldwide.

Telecommunications/cellular network billing services: In March 1991, EDS acquired the assets of Operator Assistance Network (OAN) of Van Nuys (CA) from Com Systems. The acquisition expands EDS' services for the communications industry. OAN provides billing and collection

services, specialized data processing, and receivables financing to interexchange carriers, operator service providers, information service providers, and pay phone owners. OAN has approximately 200 customers and $250 million in annual billing and collection transactions. In February 1991, EDS acquired the Long Distance Billing System, a customer management and billing system for telecommunications firms, from Lubbock Data Center, Inc. of Lubbock (TX). In October 1990, EDS acquired Appex Corporation of Waltham (MA). Terms of the purchase were not disclosed. Appex provides software products and processing services to the cellular industry for use in customer management and billing, caller authorization, fraud prevention, and intercarrier settlement. Appex has been renamed EDS PCC and now operates as a wholly owned subsidiary of EDS.

Insurance claims processing: EDS provides FM and processing services and turnkey systems to commercial insurance companies and Blue Cross/ Blue Shield organizations (where state money is not involved).

Systems operations/facilities management: EDS assumes virtually all of the data processing and communications requirements for the customer over a multiyear term. Responsibilities include the design and implementation of business information systems, the staffing of the data processing functions, the development and maintenance of necessary software, and the operation of all computer activities.

- Fiscal Agent: EDS is responsible for all data processing functions as well as other administrative duties. These duties may include processing and paying claims as well as ensuring proper coordination of benefits.

- Processing Services: EDS provides data processing services from an EDS data center billed on a predetermined minimum monthly basis, usually based on the number of transactions.

- Systems Integration: EDS designs, implements, and installs the appropriate combination of hardware and software integrated into a total system designed to fulfill the customer's processing and communications requirements.

- Development (Professional Services): EDS provides system design, custom/contract programming, and joint development service.

- Consultative (Professional Services): These services include strategic and tactical information technology assessment and planning; industry-specific and conversion consulting; business process reengineering; and education and training.

Banking and Finance: EDS offers financial institutions technology-based business solutions through systems integration, facilities management (systems operations), and service bureau operations. The company's products and services include data processing, communications, information management, back-office, bank card, and payment services. The company currently serves more than 5,000 banks, credit unions, and savings institutions worldwide.

Financial transaction processing applications, generally available both domestically and internationally, include the following:

- The Card Processing Service is a transaction processing service for the financial and retail industries. The service supports credit, debit, and private-label card programs.

- The Merchant Accounting Service provides merchant transaction processing to the financial and retail industries. Merchant base profitability assessments are also provided.

- The 1stAdvantage Program offers an integrated service for credit card issuance, customer service, and merchant account servicing.

Back-office services include proofing and encoding, bulk statement filing, statement mailing, and truncation to accommodate additional check processing needs of customers.

Other services include account reconciliation processing, document storage, filming, stamping, archival storage, and statement rendering.

Microcomputer software and related products permit remote access to EDS' mainframes. Products are available for asset/liability management, financial management information, loan origination and document printing, loan loss control, safe deposit box management, call reporting, backup withholding (1099s), general ledger, fixed-asset accounting, and planning and budgeting.

EFT services are provided to financial institutions and retailers through The Exchange and MPACT automatic teller and point of sale networks.

R
GE Information Services

401 North Washington Street
Rockville, MD 20850
(301) 340-4000

Hellene S. Runtagh, President
Division of General Electric Company, Communications and Services Organization
Total Employees: 2,500
Total Revenue, Fiscal Year End 12/31/91: $600 million*
Noncaptive Revenue: $580 million*
EDI Revenues: $55 million*
* INPUT estimates

1. Description of Principal Business

GE Information Services currently provides transaction and utility processing; inquiry/response, electronic data interchange, and value-added network services; systems integration; and software development and network management professional services to over 13,000 corporate and association clients worldwide.

INPUT estimates GEIS's total 1991 revenue at $600 million.

- The company had well over 13,000 clients by the end of 1991, compared to under 13,000 clients in 1990, 10,000 clients in 1989, 6,000 clients in 1988 and 5,000 clients in 1987.

- Revenue from services provided to various units of General Electric Company is estimated at $20 million.

2. Markets Served

Overall

GEIS' revenue is derived approximately as follows:

Banking	40%
Manufacturing	32%
Telecommunications	10%
Trade and Transportation	10%
Retail	5%
Other	3%
	100%

GEIS currently has a client base of over 13,000 corporations and trade associations.

Approximately 60% of GEIS's revenue is derived from the U.S. and 40% from international sources.

GEIS products and services are offered through approximately 50 U.S. offices and offices in 34 countries, with global support and access provided by distributors, affiliates, or private data networks in 60 additional countries.

- U.S. regional offices are located in New York City, Atlanta, Chicago, and San Francisco.

- International offices are located in Australia, Austria, Belgium, Canada, France, Germany, Hong Kong, Ireland, Italy, the Netherlands, Norway, Singapore, Spain, Sweden, Switzerland, and the U.K.

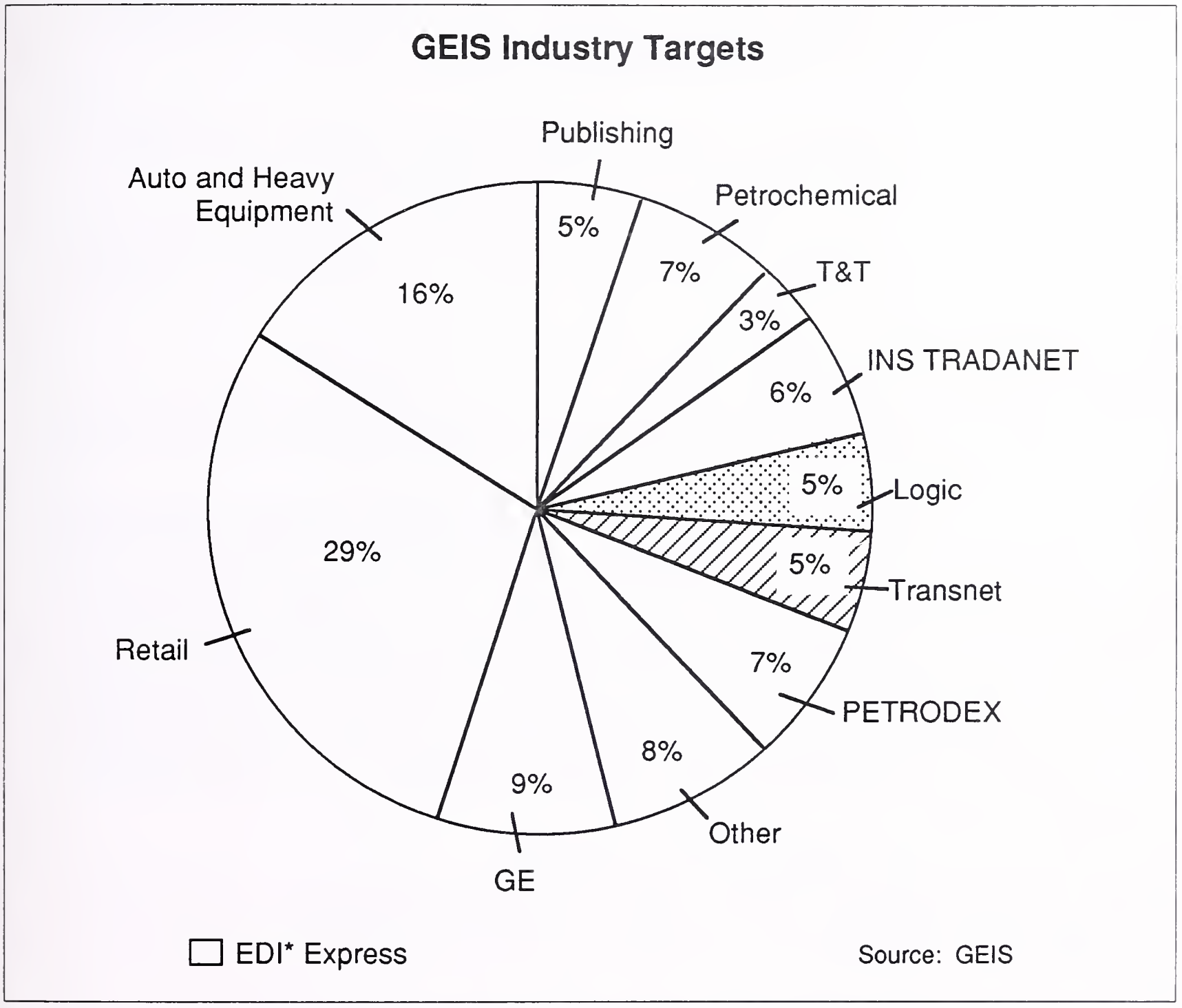
Software Development Centers are located in Rockville (MD), Nashville (TN), and Dublin (Ireland).

GEIS's network provides clients with local dial-up services in 750 cities in more than 30 countries worldwide and is available 24 hours a day, seven days a week, 365 days a year. Coverage is extended to more than 90 countries by interconnections with public data networks and international record carriers.

EDI Markets

GEIS' EDI markets parallel GEIS' general markets. Specifically, with its EDI software and service offering, Exhibit III-4 shows GEIS' industry focuses.

EXHIBIT III-4



GE refers to the EDI services that GEIS provides other GE businesses.

INS TRADANET refers to GE's EDI business in the United Kingdom, which it offers through a joint venture with ICL.

Transnet is an EDI service offered by the Motor Equipment Manufacturers Association where GEIS is the service provider in an OEM style arrangement.

3. Evaluation

GE Information Services (GEIS) is one of today's most comprehensive electronic commerce business solution providers in the world. More than just an EDI software and network service provider, GEIS offers the services of electronic mail, commercial data bases, processing services,

systems integration services, and enhanced facsimile services that are combined in various ways to provide complete business communication solutions to companies. The only important communication service it doesn't provide is telephony.

GEIS' EDI business represents only 10% of total GEIS revenues and total GEIS revenues represent only one percent of total GE revenues ($60 billion). Despite its diminutive stature among corporate GE, in 1992 GEIS was elevated from lower-level subsidiary status to become one of GE's 13 principal divisions. This reflects the strategic potential that GE executives give to the EDI and electronic commerce services that GEIS offers.

4. Strategy

GEIS, with other GE divisions, shares the GE mandate of being the dominant player in the markets it chooses to play in.

GEIS considers that corporate customers advance upward to higher levels of information infrastructure. Beginning with establishing basic data transmission capabilities (through telephone company carriers) they move next to network services, processing services, enablers (such as EDI), applications, then finally, full systems integration. GEIS has aligned its product and service offering to match this development process. GEIS' basic services start with network and processing services, then advance to managed network services, then EDI (as an enabler), then business communications (E-mail, facsimile, EDI, data bases, etc.) to fully integrated industry applications.

5. Products, Services, and Prices

GEIS services are generally categorized into the following application areas:

- Electronic Data Interchange (see below)
- Industry Applications (see below),
- Business Communications (see below)
- Managed Network Services
- Network and Processing Services
- On-line Consumer Information Services

(For complete description of these services and a comprehensive background on GEIS, please see INPUT's GEIS profile in the Vendor Analysis Program.)

GEIS provides both (1) specifically EDI software and services to companies of any industry and (2) industry-oriented "electronic commerce" solutions, where EDI is one component of an integrated suite of services (often including, for example, data bases, E-mail, and financial processing services).

Electronic Data Interchange:

INPUT estimates that EDI-related products and services contributed $55 million to GEIS' 1992 revenue.

Standard Products and Services:
Applications/Data Bases
- COEP
- UPC*Express
- Cargo*Link
- Design*Express
- EPS*Express

Generic Software Products
- EDI*PC
- EDI*Benchmark
- EDI*Central
- EDI*UNIX

Network Services
- EDI*Express
- Petrodex
- Transnet

Custom Systems:
- Pubnet
- ACES
- NWDA Service Corp.
- New Zealand Customs
- ADN
- Unipost

The EDI*EXPRESS℠ Service, introduced in 1985, provides the capabilities for sending, receiving, translating, and compliance checking of EDI messages.

- Network access methods currently available include asynchronous, bisynchronous, dial-out, USC NO LOGON, LU6.2, SNI, X25, X400, and ODETTE FTP.

- EDI*EXPRESS is designed to communicate with virtually any PC, mainframe, or minicomputer and can be accessed with a local telephone call in 750 cities in more than 35 countries.

- Document or interchange level service is available to users so they can track and monitor system usage.

  - Document Level Service provides the control and audit trails that EDI clients may require. Specific documents can be tracked through the system and checked for compliance with industry standards.

  - Interchange Level Service offers a lower priced, basic EDI network service alternative that enables EDI clients to select a level of service commensurate with the requirements of their applications. This service option complements the Document Level Service.

- EDI*EXPRESS Service has more than 10,000 users worldwide in its trading partner community and has interconnections to all the major public and many of the private EDI networks.

The EDI*PC™ System, introduced in 1985, is a software package for IBM and compatible microcomputers that allows trading partners to exchange business data in both public and private standard formats through the EDI*EXPRESS System.

- The software can be used as a standalone workstation or as a front-end to an application residing on other systems. The software sells for $1,450.

EDI*Benchmark is the upgraded mainframe software from GEIS that replaces the EDI*Central line. The major improvement of Benchmark is that it includes a mapper that runs on a PC so users can easily perform format mapping functions without using mainframe resources. Benchmark is priced in the upper $30,000s.

The EDI*CENTRAL™ Software System, introduced in 1988, is a mainframe translation and management system that supports both centralized and decentralized corporate application environments running on one or more computers.

- The system allows the client to send EDI data to and from its in-house application system and provides EDI translation between application data and EDI standard formats.

- The system is priced at $20,000 for the first copy, with additional copies per company at $12,000 each. The annual subscription service fee is $2,400 after the first year.

The DESIGN*EXPRESS™ System is a family of products that allows engineering/manufacturing design data to be processed and transmitted electronically in several types of document formats through a variety of protocol access methods.

- DESIGN*PC™ System is a fully integrated microcomputer workstation for asynchronous and synchronous communications.

GEIS also supports several private and industry association networks, including Catspeed (Caterpillar Tractor Company's private EDI implementation), Haggar Apparel Company's HOP (Haggar Order Processing), LeviLink (Levi-Strauss), PETRODEX (the Petroleum Data Exchange System), PUBNET (for textbook publishers and university bookstores), and Transnet (operated by the Motor Equipment Manufacturers Association, Englewood Cliffs, NJ).

GEIS also has EDI-related alliances with various third parties to sell its services along with their software and equipment.

The EDI Customer Support Center provides a range of support services, including routine administration, trading partner implementation assistance, trading partner administrative services, ongoing technical support, billing inquiry services, and standard or custom training programs.

Industry Applications:

Financial Services

GE Financial Information Services, formed in 1989, supports international network applications for banking and financial institutions. GEIS offers the following products/services which are generally used as part of a distributed processing service:

- FUNDSNET™ Money Transfer System is a microcomputer-based automated money transfer service targeted to corporate treasurers. Through a joint marketing agreement with Racal-Guardata, the Money Transfer System includes end-to-end authentication as a means of protecting the money transfer instructions.

- FUNDSNET™ Balance Reporting System is an automated balance and transaction reporting service used by corporate clients to manage their global cash in an environment of differing time zones and multiple currencies.

- The Global Limits System is a customized software package designed to assist international banks to manage and control their risk exposures in money markets, in credit granting and other operations, 24 hours a day, in trading centers around the world.

- TRADEWATCH™, introduced in September 1989, is a settlement instructions and reporting system for international securities settlement institutions.

- The BANCOR*EXPRESS™ System is an electronic transfer and tracking system designed to facilitate and expedite the worldwide exchange of financial data.

- BPS*CENTRAL™ System, announced in December 1989, allows banks to accept electronic payment/order remittance advices from EDI users, reformat them into ACH payment instruction format, and forward them to a third party's bank through the ACH network for settlement.

  - Incoming ACH instructions may be reformatted to ANSI 820, 823, or BAI lockbox formats. Banks can also use the BPS*CENTRAL System for internal EDI processing with customers and suppliers.

- The Leveraged EDI and Payments Program (LEAPP), introduced in 1989, is a multilevel EDI/EFT program for banks. LEAPP provides banks the opportunity to combine their corporate client relationships and payments expertise with GEIS' EDI network capabilities.

Retail

In the retail area, GEIS supports EDI, electronic payments, UPC catalogs/ bar code management, and communications between business partners.

- RETAIL*TALK Service combines electronic mail, specialized data bases, industry directories, electronic news services, and bulletin boards via a PC-based system to complement EDI transactions between retailers and their suppliers.

- UPC*EXPRESS Catalog is a service that manages and distributes Universal Product Code (UPC) numbers and their description information for vendors and their retailers. This data base is integrated with the EDI*EXPRESS System to electronically maintain and receive UPC catalog updates.

- Credit*PRO™, announced in 1989, is a fully integrated credit management system that automates and manages all the functions required for a retailer to offer credit to customers. Credit*PRO is available as a software package or on a service bureau basis.

- Pubnet

Trade and transportation

GEIS supports EDI, equipment management, consignment tracking, and motor carrier sales and marketing.

- CARGO*LINK Services is a global network-based service targeted to the trade and transport industries that incorporates EDI for shipment data exchange, data base access for transport business information, consignment tracking, and electronic mail.

- In June 1991, GEIS was selected by The World Trade Centers Association (WTCA) to provide all communication and computer services in support of WTCA's NETWORK electronic trading and information system.

- ACES is an EDI community system for the ports of New York and New Jersey. GEIS provides the software and network services for this service.

Petroleum

GEIS provides network services in support of various EDI applications.

- PETRODEX is a family of EDI applications that electronically exchanges accounting information among U.S. and Canadian petroleum companies. GEIS is the sole network service provider of PETRODEX.

- PRICE*NOTICE Service (PNS) allows petroleum suppliers to send price change notifications, bank draft advices, invoices, and other business documents to their wholesalers and jobbers via GEIS' network.

Business Communications Products and Services:

GEIS offers a range of electronic messaging and related business communications services that link a customer's geographically dispersed operations with GEIS' worldwide teleprocessing network.

The QUIK-COMM™ System is a global electronic messaging service that allows users to exchange electronic mail messages worldwide, 24 hours per day, seven days per week. Both public and private electronic mail communities are available.

- Personal Computer Mailbox is GEIS' PC-based front end to the Quik-COMM System. Users can create and file messages on their PCs as well as send and receive mail at their convenience. Users can also exchange files in ASCII or binary format.

- PC Mailbox Multiuser provides messaging capabilities in a multi-user environment. Office coordinators can manage messages for a group as well as perform other administrative tasks using Personal Computer Mailbox.

QUIK-COMM users have access to the following electronic messaging delivery services:

- Fax delivery of messages

- Telex delivery of messages

- Hardcopy delivery anywhere within the continental U.S. or Canada via the QUIK-GRAM™ Service

- X400 delivery, with QUIK-COMM users exchanging messages with users on the major public electronic mail services. GEIS has X400 service interconnection agreements with major organizations in most European countries, including AT&T , AT&T EasyLink, France Transpac, Swiss PTT, Radio Austria, Deutsche Bundespost Telekom, Swedish Telecom International, Helsinki Telephone Company, Finnish PTT, BT North America, BT Plc, PTT Telecom Netherlands, Norwegian Telecom, MCI, Sprint International Data Services, and IBM Information Network. Agreements with other vendors are under negotiation.

- The BusinessConnect™ System, introduced in 1990, allows QUIK-COMM users to exchange messages with users on dissimilar host, mini, or LAN-based messaging systems, including cc:Mail; CompletE-Mail; DaVinci EMAIL; DEC ALL-IN-1, VMS Mail and Message Router; IBM AS/400 Office and System/3X, DISOSS, and PROFS; MHS; Network Courier; Wang OFFICE; and 3COM 3+Mail.

The BusinessTalk™ System is an E-mail service designed to process, distribute, and retrieve information for members of a geographically dispersed business community through an Apple Macintosh or IBM PC-compatible computer. BusinessTalk combines the functions of QUIK-COMM electronic messaging with access to public and private keyword-searchable information data bases and electronic bulletin boards.

The QuikNews™ Service is an electronic news clipping service that delivers selected newswire articles to a QUIK-COMM user's mailbox.

- Users create a personal profile of news topics of interest and the QuikNews Service processes the news as it is received and sends articles matching the selected key words to a user's electronic mailbox.

- QuikNews Services sources include UPI, Deutsche Press-Agentur, Kyodo News Service, and Agence France Presse, among others. On-line PR news services include PR Newswire and BusinessWire.

The Sales Marketing Communication System (SMCS), introduced in 1991, is a sales automation software package that combines GEIS' global network connectivity and support with a customizable workstation for territorial sales management. SMCS is based on BusinessTalk and consists of integrated modules for lead tracking, order entry, scheduling, tickler file notification, forecasting, and call reporting.

In March 1991, GE announced that it had a contract from the Netherlands Ministry of Internal Affairs agency (called GBA) to develop and operate an electronic message handling service for Dutch government and municipal offices (some 1,000 offices altogether). This X400-based service follows from a pilot service set up for GBA in 1987.

6. Competition

GEIS' primary competitors include AT&T Istel, BT North America, IBM IN, Infonet, Sprint International, and Reuters.

In the EDI and electronic mail area GEIS also competes with Sterling Software (Ordernet), MCI, AT&T Easylink, and various PTT-provided services.

S

Genzlinger Associates Incorporated

Two Northfield Plaza, Suite 212
5700 Crooks Road
Troy, MI 48098
(313) 879-7070

Vance Genzlinger, President
Private Corporation
Total Employees: 18
1990 Revenues: $1 million*
*INPUT estimate

1. Description of Principal Business

Genzlinger Associates Incorporated is a value-added reseller specializing in developing and marketing software products for the repetitive manufacturing industry. The company was formed in 1971.

In 1980 Genzlinger Associates developed a custom EDI and manufacturing software system for General Safety Corporation, a supplier to General Motors. Subsequently the company modified the software and marketed the product to other automotive suppliers and repetitive manufacturers.

2. Markets Served

Genzlinger focuses exclusively on repetitive manufacturers. Most of the company's customers are automotive suppliers characterized by long production runs of their products. Genzlinger markets its products primarily in the U.S. and Canada.

3. Evaluation

Genzlinger is another small EDI software company that has established itself in a niche with strong customer loyalty. It is not going to become a major EDI player but it has the advantage over the big EDI vendors in that it knows the vertical market that it serves and is very responsive to its customers, able to provide real solutions, not just "off the shelf" software.

Genzlinger focuses on repetitive manufacturers. Genzlinger offers one-source shopping for fully integrated manufacturing, accounting, and factory data collection systems. The company's UNIX-based software runs on a wide variety of commodity computer equipment, and also gives the company enhanced acceptance into engineering and technical environments where this operating system is favored.

4. Products, Services, and Prices

Genzlinger Associates develops and markets a line of MRPII software products catering to the needs of repetitive manufacturers in the automotive industry. The company's products include Master Production Scheduling, Material Requirements Planning, Standard Costing, Release/Shipment Communications, Factory Data Collection, Statistical Process Control and a complete set of accounting applications.

The company's EDI software product Release/Shipment Communications supports ANSI X12 and AIAG standards.

- The software, written in UNIX/XENIX, runs on a variety of micro and minicomputer hardware platforms. Genzlinger is an authorized VAR of Texas Instruments and Bull UNIX platforms and several XENIX micro platforms.

- The major features of Release/Shipment Communications are as follows:

  - Receives releases directly from customers or third-party networks in AIAG, Caterpillar, Chrysler, Ford, GM, Honda, Mazda, Navistar, Nissan, NUMMI, Isuzu, Subaru, and other formats.

  - Prints hourly, daily, weekly, and monthly scheduling reports in five shipping-schedule formats

  - Supports manually entered releases

  - Converts diverse release formats to a standard format for reporting and data manipulation

  - Prints raw-material requirements (Uses bill of materials)

  - Prints net change reports

  - Generates packing slips

  - Transmits shipment notification

  - Maintains "cumulative" shipments

  - Generates invoices for print and transmission

  - Generates bills of lading and export papers

  - Prints sales forecasts

- Integrates with:
  Master production
  Material requirements planning
  Inventory management
  Bill of materials
  Standard costing
  Customer order processing
  Bar code labeling
  Factory data collection

- Release/Shipment Communications is priced according to the number of users. The single user UNIX/XENIX price is $3,200.

In 1985 Genzlinger Associates introduced Entry Level Release/Shipment Communications System for IBM PCs and compatibles running DOS. The system has similar features to Genzlinger's primary product.

- Entry Level Release/Shipment Communications System can be upgraded to the company's primary product, Release/Shipment Communications.

- Entry Level Release/Shipment Communications is priced from $2,100 for the basic version.

Genzlinger supports its clients with a full range of hotline, onsite assistance, consulting, custom programming, installation, and training services.

T

Harbinger* EDI Services, Inc.

1055 Lenox Park Blvd.
Atlanta, GA 30319
(404) 841-4334

James C. Davis, President
Private Corporation
1989 EDI Revenues: $1.6 million (including network services)
Total Employees: 55

1. Description of Principal Business

Harbinger* EDI Services, part of Harbinger Computer Services (founded in 1983), is a strategic alliance with Westinghouse Electric, C&S Bank in Atlanta, First Bank System in Minneapolis, and Marine Midland Bank in Buffalo. The company features EDI PC software and Tandem-based value-added network (VAN) service for companies wishing to establish EDI links with their trading partners.

2. Markets Served

Direct EDI Sales

Users of Harbinger's network service/software combination span a variety of industries including utilities—Southern California Edison, Pacific Power & Light, Consumer's Power (Michigan), telecommunications (Bell Atlantic), manufacturing (Westinghouse, Champion Paper, Alcoa, Abbott Laboratories), and banking (Wells Fargo, First Atlanta, Marine Midland). Other industry specialties include aerospace, retail, health care, and transportation.

OEM Arrangements

Harbinger has licensed its EDI switching/processing software and PC package to Bell Atlantic and U.S. Sprint. Bell Atlantic is using the software to offer EDI network services to clients in its operating domain. Sprint is also offering EDI network services to its corporate clients. In addition, Sprint is reselling Harbinger software, under a Sprint label, to network providers worldwide (primarily PTTs and other phone companies). Sprint is initially targeting providers that already license Sprint's Telemail E-mail software.

3. Evaluation

Harbinger's approach is to provide an inexpensive software and network services solution with a clear upgrade path. Much of Harbinger's success has come through its comprehensive implementation strategy for hub companies. Through Harbinger's hub-company sponsored seminars, large numbers of trading partners are brought on board quickly and inexpensively. Free software and network services for a trial period entice adoption of the InTouch*EDI solution. Harbinger's extensive customer support system (toll-free hotline number, context-sensitive help screens, documentation) encourages retention of the software and increased use of EDI for routine business documents.

At publication time of this report, Harbinger was rumored to be acquiring midrange EDI software, which would complement its existing PC-based software and provide a smooth upgrade path for its customers.

Strengths

- Targeted Market Focus. Harbinger pioneered the very successful hub-spoke marketing strategy, offering to quickly and inexpensively bring up on EDI the suppliers ("spokes") of a large ("hub") company. This strategy, now duplicated by other EDI vendors, has allowed Harbinger to quickly gain market share.

- Complementary Financial Network Service. Harbinger's cash management and bank processing businesses complement its EDI business. Harbinger has a solution for those EDI customers who want to make electronic payments.

Weaknesses

- Limited Product Technology. Harbinger's EDI software is limited in its ability to integrate with application software. While it may be useful to users in the short term (especially the hub company), in the long term it will need to be replaced. Harbinger does not offer more advanced EDI software with which users can move forward with their integration strategies.

4. Products, Services, and Prices

Harbinger offers EDI and treasury management software, network services, and professional services. Harbinger also licenses its message-switching software for other companies to provide EDI value added network services.

EDI and Treasury Management Software

InTouch*EDI ($1,295)—built for the spoke-company user. Receives and sends standard EDI messages. Not designed to be integrated with the user's internal applications.

InTouch*EDI Plus ($1,995)—more integration features than In*Touch; allows for unattended operation.

InTouch Cash Manager; treasury workstation software.

InTouch*PAT (Payment and Transfers); treasury workstation software.

InTouch*Shipper ($2,000-$3,000—still undetermined at time of publishing); creates outgoing shipping notices and prints bar codes (to be placed on shipments) based on incoming purchase orders; runs in a Windows environment.

Note: at the time of publishing this report, Harbinger was in the process of buying the rights to the EDI translation software of Blue Rainbow Software International Corp., a U.K.-based maker of midrange EDI translation software.

Network Services

Harbinger provides EDI network services in addition to software. Network services start with a $10 monthly subscription and transaction charge. Off-peak and quantity discounts are available.

Message Switching Software

Harbinger's internally developed EDI switch/hub software (with store-and-forward and other processing functions) runs on Tandem computers. It licenses this software to companies wishing to establish their own EDI network services. The license fee includes the switch software and the PC EDI software that runs at the customer site. The total license fee is in the seven figure range.

Harbinger has already licensed its switch software to Bell Atlantic and U.S. Sprint. In addition to using the software as the basis for its own EDI offering to its clients, Sprint has the exclusive right (expiring in 1992) to resell the software worldwide.

5. Alliances

Harbinger has licensed its switch software to Bell Atlantic and U.S. Sprint.

U

Kleinschmidt, Inc.

450 Lake Cook Road
Deerfield, IL 60015-4973
(708) 945-1000

Harry Gaples, President and CEO
Private Corporation (Employee owned)
Total Employees: 37
Total Revenue, Fiscal Year End 12/31/92: $12 million*
*INPUT estimate

1. Description of Principal Business

Kleinschmidt is a small, employee-owned company focusing on EDI in the transportation sector, especially serving large shipper companies and their communications with truckers and railroads.

The company has phased out of its other businesses and now concentrates on EDI (including rail car location messages) and providing high-quality and responsive services.

Kleinschmidt's main competitors include Railinc, BT Tymnet, Sterling Software, GE, IBM, AT&T, TranSettlements, .

2. Markets Served

Kleinschmidt is focused on serving large shipper companies in a variety of industries, and railroad and trucking companies. In addition, Kleinschmidt offers EDI mailbox services to a cross-section of industries in North America including grocery, food processing, warehousing, chemicals, petroleum, consumer products, forest products, brokerage firms, and distributors.

3. Evaluation

Strengths

Well established and strong contender in transportation.

Kleinschmidt is well focused, managed, and it is growing.

It provides high service at competitive prices.

Good technology. Including LU6.2, real-time, and dial in/out at any speed/protocol.

Closeness to customers. The company provides customized document translation, report generation services, and other systems integration support.

Weaknesses

Limited resources and prerogative of executive management confine it to a niche-player status.

Unable to serve customers around the world.

4. Products, Services, and Prices

Kleinschmidt provides railroad car location messages for shippers and EDI services.

Kleinschmidt began with services to the rail industry and receives most of its railroad data directly from railroads.

Translation services require users to provide the company with proper data mapping to enable conversion of data into transmittable standard formats.

- Unlike other EDI services, the company takes the unique approach of supporting any format, including specific industry standards such as X.12 or AIAG. Kleinschmidt accepts and translates a customer's existing format, while other third parties require their customers to adopt industry standards.

- Adopting standards, according to Kleinschmidt, can be a fairly major effort. Because Kleinschmidt does not require specific formats, the company claims certain competitive advantages.

Customers can access the service via virtually any asynchronous or synchronous communications protocol directly, via publicly switched lines, dedicated lines, or Datapac. Alternately, Kleinschmidt will call the customer's computer on a prearranged schedule or send data real-time on dedicated lines.

Kleinschmidt, in addition to sending data from computer to computer, also sends data from computer to faxes.

5. Strategy

Kleinschmidt wants to move into other industries, using its base in transportation. This will be difficult as competition is fierce in these other areas.

Kleinschmidt is a possible acquisition target, yet its owners consistently ask for top dollar.

6. Facilities

Kleinschmidt currently has Tandem Model TXP fault-tolerant systems with 16 processors installed. Kleinschmidt is building a second computer facility ten miles north of its existing facility. The plan is to have each site back up the other.

Multiple Local-Access Phone Companies: Kleinschmidt is serviced by two local-access carriers—Illinois Bell and DIGINET. The latter brought fiber into Kleinschmidt for multiple T-1 services.

V

LDJ Incorporated

2200 Stephenson Highway
P.O. Box 219
Troy, MI 48099-0219
(313) 528-2202

Leon D. Jackson, CEO
Private Company
Total Employees: 55
1991 Revenue: $3 million*
*INPUT estimate

1. Description of Principal Business

LDJ Incorporated was formed in 1970 to supply the magnetic materials industry with measurement and control equipment. In the early '80s, LDJ realized that the demand for measurement and control products in the magnetics marketplace was limited. The company decided to address the factory automation equipment market and in 1982 commenced product development on a series of products. In late 1984 and early 1985, LDJ shifted emphasis to plant floor monitoring and statistical process control products. Today LDJ has three divisions: Instrumentation, Magnetics, and Computers.

2. Markets Served

LDJ focuses exclusively on repetitive manufacturers, across all industries. Most of its customers are in the automotive sector.

LDJ markets its products in the U.S. and Canada. The company does not use indirect sales channels (such as distributors) and sells directly to users.

3. Evaluation

LDJ's strategy is to provide a complete, integrated manufacturing solution, including factory automation for repetitive manufacturers, and to achieve superiority in the field of computerizing and automating the factory floor of these companies.

LDJ is a small company that serves its customer base well.

4. Products and Services

LDJ's family of automation products is called the LDJ Monitor System. It is targeted to the repetitive manufacturer of discrete products. It provides the ability to automatically control and monitor product quality, personnel and machine efficiency, in-process and finished inventory, and preventive

maintenance. It also provides communication from the factory floor to mainframe computers.

In 1982 LDJ introduced LDJ™ Messenger to incorporate EDI functionality into its product line. This EDI software product supports most UNIX-based systems including IBM RS/6000, Unisys 5000, Hewlett-Packard HP9000, and Prime EXL.

- LDJ™ Messenger supports ANSI X12 standards.
- LDJ™ Messenger has the following features.
  X12 Transaction processing Module:
  - Validate X12 transaction sets
  - Create Accept/Reject sets for transmission to original sender
  - Update into data base manager format
  - Soft table maintenance
  - Format X12 transaction sets for transmission
  - Process-mixed versions, control headers
  - Full add-on X12 capabilities via data base
  - Unattended operation
  - User customization of screens and menus
  Communications Module:
  - Bisynchronous and asynchronous communications
  - Autopilot and auto receive
  - Multiple-format processing
  - Raw data print, inquiry capabilities
  - Complete real-time EDI audit trail
- LDJ™ Messenger is priced at $6,000.
- The company claims 75 installations of LDJ™ Messenger.

W

Lloyd Bush, Inc.

40 Broad Street
New York, NY 10004
(212) 809-8560

Lloyd A. Bush, President
Private Company
Total Employees: 20
Total Revenue, Fiscal Year End 12/31/91: $1.5 million*
*INPUT estimate

1. Description of Principal Business

Lloyd Bush, Inc. provides inexpensive EDI software products and management consulting services for the financial community.

2. Markets Served

Lloyd Bush sells its software products to all industries. Initially, the company was most successful in marketing its EDI software to the railroad industry. Approximately 95% of Lloyd Bush's EDI software revenue is derived from the U.S. and 5% from international sources. Lloyd Bush has licensed X-Change to 250 clients (EDI hubs) that support over 50 trading partners.

3. Evaluation

Lloyd Bush actively sells EDI software at major EDI conferences and appears do well at this. It is a mass market, very low-budget marketing approach.

4. Products, Services, and Prices

The majority of Lloyd Bush's revenues are derived from management consulting services for the financial community. These services are not considered information services. The remainder of the company's revenue is derived from EDI software.

Lloyd Bush's standalone EDI translation package, known as X-Change, was introduced in 1985. X-Change supports ANSI X12, UCS, TDCC, UICS, TCIF, and other standards and is available for the IBM PC and compatibles running under MS-DOS and for Sun Microsystems equipment running under UNIX. All the major third-party networks are supported.

- X-Change features include one-step document turnaround, unattended sending, automatic trading partner setup, import/export of data in ASCII file formats, pop-up selection windows, on-line help, a simplified user manual, and an archive utility.

- Qualifying EDI hubs can purchase a license for unlimited copies for trading partner use. The license, which is free, specifies only one entity and location as the trading partner for all the copies the EDI hub distributes. Copies of the software are provided at cost—approximately $10 each.

- Users who need the capability to reach additional trading partners can upgrade to the multitrader partner version of X-Change for a one-time charge of $895. This upgrade can be received electronically from Lloyd Bush the same day it is ordered.

X

Motor & Equipment Manufacturers Association/Transnet

300 Sylvan Ave.
P.O. Box 1638
Englewood Cliffs, NJ 07632
(201) 894-6859

1. Description of Principal Business

Developed in 1975, Transnet is one of the first electronic ordering systems, originally used by five companies in the automotive parts aftermarket. Services were later expanded to additional users, and administration of the network was transferred to the Motor and Equipment Manufacturing Association (MEMA) and its for-profit, taxable subsidiary, the Management Information Systems Group.

2. Markets Served

Approximately 100 manufacturers, representing most automotive aftermarket suppliers, plus 6,000 wholesalers and retailers representing 80% of the largest distributors, use the system. Approximately 35% of Transnet users are not involved in the automotive industry, but rather are appliance distributors, mass merchandisers, warehousing companies, heavy equipment manufacturers, electronics distributors, and utility companies.

3. Evaluation

Transnet arose prior to the development of ANSI X12 and UN EDIFACT standards, which demonstrates it is one application of EDI that is truly necessary (it was created prior to a standards infrastructure). MEMA/ Transnet serves this specific niche well. Transnet appears to have an insured existence as long as there are auto parts stores. The only change might come in the form of a buyout by a larger EDI VAN.

Transnet management appears unconcerned about competitive threats and is focused on serving its clientele/membership.

4. Products, Services, and Prices

Transnet users enter orders on their order entry systems, and batch-transmit them to Transnet for distribution to suppliers. The focus has been exclusively on purchase orders, although additional transactions (i.e., invoices) are being added.

- Transnet validates order formats and separates them for transmission to suppliers.
- The network offers several options, such as validation of part numbers and measuring units, accumulation of prices or weight in any given transaction, order consolidation, management reports, and E-mail.
- As certain totals are reached, the system can notify the user of available price breaks.
- Errors are reported to the user for correction.
- Translation services from the Transnet format to a version of X12 are available, and additional translation capabilities are being considered.

Suppliers pay usage fees based on the GE Information Services network's retail pricing, with MEMA paying discount volume prices. The margin realized supports Transnet's operations.

Buyers do not pay any usage charges other than the costs of connecting to a GE Information Services network node.

MEMA distributes PC software free to users to facilitate usage.

5. Alliances

Transnet uses GE Information Services Corporation's value-added network for telecommunications services. A number of turnkey systems companies (notably, Triad Systems) have been licensed to incorporate Transnet's capabilities into their ordering systems.

Transnet is interconnected with Sterling Software Ordernet and GEIS' EDI*Express network. Companies using these networks who wish to do business with Transnet customers are not required to joint the Transnet System.

Y

National Data Corporation

National Data Plaza
Atlanta, GA 30329-2010
(404) 728-2000

L.C. Whitney, Chairman
O.G. Greene, President and CEO
Public Corporation, NASDAQ
Total Employees: 2,200 (5/91)
Total Revenue, Fiscal Year End 5/31/91: $227.5 million

1. Description of Principal Business

National Data Corporation (NDC) provides various processing services, professional services, turnkey systems, and systems operations services primarily in the areas of credit and debit card authorization and processing; cash management and information reporting; and health care systems and claims processing.

INPUT estimates that approximately 87% of NDC's total revenue was derived from various processing services, 10% from turnkey systems sales, and 3% from the sale of application software packages.

In 1992, NDC introduced an EDI offering to its bank clients and prospects allowing the banks, in turn, to offer EDI services to their corporate clients. The service is primarily aimed at providing EDI payment services (X12 820, NACHA, and BAI formats), yet NDC's network is capable of processing all kinds of EDI transactions, financial and otherwise.

2. Markets Served

A majority of NDC's fiscal 1991 revenue was derived from the banking and finance and retail industry sectors. Approximately 17% of revenue was derived from the health care industry and 7% from the federal government (under direct contracts or as a subcontractor). The remainder was derived from telecommunications firms, corporations, and other commercial clients. Approximately 96% of NDC's fiscal 1991 revenue was derived from the U.S. The remaining 4% was derived from Canada, Japan, and Europe.

NDC's EDI service, aimed at banks, leverages NDC's well established network presence in the retail and pharmacy sectors through credit card verification devices at retail establishments and claims processing connections at pharmacies.

NDC expects to see the EDI payment service used for electronic tax payments (by corporations), retailers, petroleum retailers, government programs, and health care.

3. Evaluation

NDC may be the right kind of service provider to get banks past their gridlock in providing EDI/EFT payment services. The large number of banks (14,000) in the U.S. make it difficult for any one bank to have a profitable business servicing electronic payments, but a provider that serves many banks may attain the needed economies of scale. NDC currently has more than 300 bank customers.

Strengths

Wholesale Payments Concept. NDC can attain economies of scale in electronic payments that would make for a profitable business in payments.

Extensive Network. NDC has 350,000 retail merchants and over one million retail locations on its network (performing electronic draft capture and credit card authorization). It has 70% of the nation's pharmacies on line (for which it performs insurance claims processing).

Strong in Retail. Retail is one of the most important sectors in the economy to provide value added network services because the amount of traffic is so high and the data from the transactions can be used for so many purposes. NDC is strong here. It can leverage its network to provide more value-added services to its bank clients and their clients. For example, NDC can equip a retail store's POS terminal—used for tracking inventory—with other capabilities, such as balance reporting, cash concentration, tax payments, payroll, payment to suppliers, and immediate reordering as merchandise is sold.

Weaknesses

Difficult to Market through Resellers. Banks have enough problems of their own and may not have the resources to sell the NDC service to their clients.

4. Products, Services, and Prices

Corporate Financial Services Division provides a range of processing services for corporate information reporting, electronic tax collection, electronic data interchange (EDI), and cash management.

Corporate and government organizations use information-reporting services to collect, consolidate, and report financial, administrative, and operating data from more than 170,000 locations.

a. EDI Services

The Global Exchange™ service translates business-to-business communications into standard formats allowing the customer to electronically exchange payments and remittance information with its trading partners.

- Transport 90™, NDC's data communications software, manages the automatic delivery, receipt, and monitoring of data file transmissions between multiple computers and/or data transmission devices.

NDC's Global Exchange is priced as a shared service to banks. It comes at a $25,000 initial fee, then costs $10,000 per year afterwards.

ENACT™ (Electronic Network for the Automated Collection of Taxes) is an electronic funds transfer (EFT) service offered by NDC that replaces bank handling of paper-based federal tax deposit coupons for U.S. Treasury tax and loan payments.

- NDC receives the tax reports, consolidates the data, calculates an effective payment due date, initiates the funds transfer process on the appropriate date, and delivers the payment information to the IRS Service Center.

- In addition to the Federal ENACT program, NDC processes corporate tax payments for six of the 13 states currently mandating use of EFT for such payments. More than 11,000 corporations report tax amounts and related information to NDC.

Cash Concentration services permit electronic concentration of local bank deposits from an organization's remote locations into central banks for accelerated funds availability.

- Approximately 4,000 corporations presently use this service.

Multibank balance reporting, transaction initiation, and other enhanced cash management services for banks are provided through NDC's Cash Management Exchange™ (CMX) and Networks for Electronic Transaction Services (NETS®).

Communications Services Division

This division currently offers operator services to interexchange (long distance) and local exchange telecommunications carriers and inbound voice services to various commercial customers.

b. Related Electronic Commerce Services

Electronic Payment Services Division

This division handles credit and debit card authorization, check verification, and draft capture services to approximately 200 financial institutions reaching over 200,000 retail locations. Card authorization services are provided via voice, audio response, dial-up terminals, and electronic cash registers. Over 200,000 merchants obtain authorizations electronically from NDC.

Remittance-processing services provided by NDC include depositing payments to a customer-designated account and providing same-day accounts-receivable updates and summary reports. Approximately 35 customers use this service.

NDC provides a terminal-based electronic data capture (EDC) system that uses NDC's electronic point-of-sale authorization system to verify credit and permits the terminal on the merchant's premises to electronically capture the entire transaction and transmit necessary information to NDC's central computer for immediate clearing through the banking system. Specialized applications for restaurants, hotels, and oil companies have been developed by NDC using traditional land-based communications. NDC has plans to expand into FM radio, satellite, and other broadcast technology. Approximately 100,000 merchant locations currently use NDC's EDC system.

Card Acceptance Services Division:

This division offers merchant credit-card-processing services, including merchant accounting, authorization, data capture, customer service, credit, and support functions. These services are currently provided to 55,000 customers with approximately 65,000 total merchant locations using point-of-sale equipment.

Health Care Services Division:

This division provides turnkey systems for pharmacy and dental office management and verification, authorization, data capture, and funds transfer services to the health care industry.

DataStat™, introduced in 1983, is a turnkey pharmacy management system designed for independent retail pharmacies, pharmacy chains, nursing home pharmacies, government-operated pharmacies, and pharmacies serving HMOs, clinics, and hospitals.

The DataStat Dental System is an IBM PC-based turnkey system for dental office management. The system supports managing and maintaining patient information, appointment calendars, insurance claims processing and follow-up tracking, patient treatment planning and tracking, and customer billing and receivable tracking.

NDC Federal Systems, Inc. (FSI), formed with the acquisition of Libra Group in 1984, provides professional services for health care applications. Services are provided primarily to federal government agencies.

NDC also provides electronic eligibility verification, real-time claims authorization, data capture, and adjudication services to a variety of health care markets such as hospitals, HMOs, pharmacies, and preferred-provider organizations.

Z

Perwill EDI, Inc.

6133 Rockside Road
Suite 402
Independence, OH 44131
(216) 642-7565

Ms. Jan Pallenik, President
Wholly Owned Subsidiary of
The Perwill Group (U.K.)
Total Employees: 25
Total Revenue, Fiscal Year End 3/31/91: $1.7 million*
*Company estimate

1. Description of Principal Business

Perwill EDI, Inc. was established in 1985 as the North American subsidiary of The Perwill Group to develop, market, and support EDI software. The Perwill Group (Alton, Hampshire, U.K.) was founded in 1973. During 1985, the company began offering EDI software and services to users of Hewlett-Packard HP3000 systems.

- The company has since expanded the availability of its software to IBM mainframe and PC, NCR, DEC VAX, and other UNIX-based environments. There are currently over 350 mainframe and midrange-based installations and 400 PC installations worldwide. Approximately 20% of these installations are in North America.

- The Perwill Group has approximately 110 employees worldwide. In addition to its U.S. subsidiary, The Perwill Group has subsidiaries in Hamburg (Germany), Singapore, and New South Wales (Australia).

- Perwill management estimates Perwill Group's fiscal 1991 worldwide revenue will reach $8 million, of which approximately $1.68 million will be derived from Perwill Incorporated. During fiscal 1990, Perwill Incorporated generated approximately $940,000 in revenue.

2. Markets Served

Perwill markets its EDI software products across all industries. A significant number of clients are in the electronic, retail, and manufacturing industries. The company also has clients in financial services, health care, transportation, and other areas of discrete manufacturing. Approximately 95% of Perwill Incorporated's revenue is derived from the U.S. and 5% from Canada. Sales outside North America are handled by the parent company and its other subsidiary and distribution outlets. There is currently an installed base of 75 mainframe/midrange systems and 160 PC-based systems within the U.S. and Canada.

3. Evaluation

Perwill's strategy rests upon providing its clients with systems that, in addition to local requirements, meet international operational requirements.

Perwill has a strong international view of EDI and related markets. This makes it able to service multinational companies and other companies that maintain trading partners across national borders.

Perwill is present in many sales situations in Europe and the U.S.

4. Products, Services, and Prices

Approximately 75% of Perwill Incorporated's revenue is derived from software licenses and associated maintenance services. The remaining 25% is derived from consulting and customization services.

Perwill's current product line, Perwill*EDI, includes a selection of PC, minicomputer, and UNIX products available for a wide range of computer hardware platforms.

- Perwill offers a compatible upgrade path.
- Perwill*EDI supports U.S. and international standards, which include ANSI X.12, UN/EDIFACT, TDCC (all variants, including UCS and WINS), TRADACOMS, ODETTE, and SPEC 2000 C&M.

Perwill*EDI software consists of four modules:

- EDIFORM - mapping and maintenance facility
- EDIPARSE - translation/formatter
- EDILINK - communications interface
- EDIMGR - audit and control management

Within the EDI process, Perwill*EDI software operates as follows:

- Data integration is facilitated by the EDIFORM data reformatting tool, thus allowing easy translation from application output files to EDI data that is ready for EDI translation and packing for transmission. EDI data can also be used to create files suitable for application integration. EDIFORM features also include data item cross-referencing, code look-ups, substitution and static data entry (which may be used for any file), and data remapping into the required layout for translation into the selected standard.

- Once the file has been formatted into the correct layout for the chosen trading standard (e.g., ANSI X.12), it may be translated and packed using EDIPARSE. EDIPARSE will translate to and from all currently supported data interchange standards.

- Once the file has been packed, it is ready for transmission to the network. EDILINK controls the transmission and/or receipt of data to/from trading partners or value-added network suppliers (VANs). EDILINK allows definition of the rules for accessing VANs (and, where appropriate, business partners). The file can be executed either interactively or in batch mode to interrogate the "mailbox" and make decisions about the status of the information it finds. EDILINK presents a uniform user interface, regardless of the syntax differences of the VAN commands.

- EDIMGR provides a control and audit facility that monitors all packages sent and produces lists (after preset times) when acknowledgments are not forthcoming.

Perwill*EDI is priced from $1,500 to $27,000. Customers are provided with three months (90 days) of support. Thereafter, the annual maintenance charge is 15% of the list price.

Training services are also available to handle individual customer requirements.

5. Alliances

Perwill Incorporated has distributors of its software throughout North America. Its parent company, The Perwill Group, has marketing alliances with companies throughout Europe, Asia, and the Pacific Rim for the distribution of software products and associated services.

AA

Piedmont Systems Incorporated

4400 Silas Creek Parkway, #300
Winston-Salem, NC 27104
(919) 760-3620

Chuck Cloer, President
Private Company
Total Employees: 8

1. Description of Principal Business

Piedmont Systems was founded in February 1987 to develop and market EDI management software. The principals of Piedmont Systems have a background in application software and the distribution industry. Piedmont Systems' strategy focuses on developing EDI software with extensive mapping and translation features for easy integration with a client's existing applications. The company claims it can typically have an installation site functional in one day, and can shorten or eliminate a test phase in a standalone operation.

2. Markets Served

Piedmont Systems' customers are primarily small to medium-sized businesses. Approximately 60% are in distribution, and the remaining 40% are manufacturing companies. The company has customers in the tobacco, textile, glass, chemical, and automotive industries. One hundred percent of Piedmont Systems' revenue is derived from the U.S. Future plans include expansion into international markets. There are currently over 200 TEL-EDI installations.

3. Evaluation

Piedmont is one of many small EDI software vendors. Despite its small size it has been very aggressive in developing and marketing its product.

4. Products, Services, and Prices

Piedmont Systems' EDI software product, TEL-EDI, was introduced in April 1988.

- TEL-EDI supports ANSI X12 and TDCC standards and its subsets.
- TEL-EDI runs on single-user MS-DOS (Version 2.0 or higher) systems (IBM PC and compatibles) and low-end multiuser systems running under UNIX or XENIX.

- The general features of TEL-EDI are the following:
  - Document turnaround
  - On-line search capability
  - Automatic, timed dial-out mode
  - Transmission control reporting
  - Multiple third-party network support
  - Table driven—all tables user-modifiable
  - Ability to create proprietary formats and subsets

- In a front-end or integrated environment, Piedmont Systems claims a unique process for mapping EDI data into applications files. With the exception of ID codes, users can specify the code set, numeric and data packing schemes, and byte locations of the data to be presented to their internal applications. These specifications can be done using a single flat file or multilevel files up to ten levels deep. The primary benefit is that users can design the TEL-EDI output file to look like one of their own records rather than pick data from a rigid format designated by the vendor's software.

- The TEL-EDI Base Package is priced at $2,495. The TEL-EDI Integration Option, which enables users to interface with their existing applications, is priced at $1,190.

- Annual maintenance is priced at $450 for the Base Package and $650 for the Base Package with Integration Option.

BB

Premenos Corp.

1000 Burnett Avenue
Suite 200
Concord, CA 94520
(510) 602-2000
Fax: (510) 602-2024

Chairman: Lew Jenkins
President & CEO: Daniel M. Federman
Private Corporation
Total Revenue, Fiscal Year End 12/31/91: $9 million*
*INPUT estimate

1. Description of Principal Business

Premenos develops, markets and supports electronic messaging software products for midrange computers, including EDI software for IBM AS/400, RS/6000, System/38, System/36, and HP 9000 systems, and electronic mail software for IBM AS/400 systems.

2. Markets Served

Premenos currently provides its products to more than 2,000 customers in all industries, including apparel, automotive, banking, electronics, health care/medical, government, chemical, petrochemical, transportation, and retail. Approximately 80% of Premenos' 1991 revenue was derived from the U.S. and 20% from international sources. Premenos has a significant user base in Canada, Europe, South America, and the Pacific Rim. Premenos offices are in Concord, CA, and Paris, France.

3. Evaluation

Premenos is one of the premier EDI software vendors today and the leader in the midrange market. It has a strong research and development capability and has brought new and innovative products to the market, namely its Q-mail, EDI-e development language, and UNIX translator products. INPUT believes the midrange market will continue to expand as, in some respects, the midrange platform is ideal for conducting "production-level" EDI. The midrange platform is the natural migration destination for both the EDI user who started on the PC and needs to add capacity and the EDI user that started on the mainframe but wants to downsize and run divisional EDI. Midrange computers are heavily entrenched in the transportation, manufacturing and distribution industries—which are the three mainstream EDI marketplaces. Premenos' UNIX product, still untested,

may prove to make up for the company's lack of PC or mainframe products. During 1991 Premenos went through a period of declining sales but this seems to be turning around. Some customer response has held that Premenos' translation software is slow.

4. Products, Services, and Prices

EDI/400, EDI/*e*, EDI/38, and EDI/36 are data communications and translation software products for EDI applications. The products allow users with prior experience to implement EDI with suppliers or trading partners.

- The software supports all major standards, such as EDIFACT and ANSI X12, and their various subsets.

- EDI/400, EDI/38, and EDI/36 support EDI applications on IBM midrange systems (AS/400, S/38, and S/36, respectively).

- EDI/*e*, released in April 1992, is written for UNIX and makes full use of the client/server environment. The patented, built-in programming language—e—allows users to write custom translation programs in a fraction of the time usually required. The product supports IBM RS/6000 and HP 9000 environments.

  Pricing is as follows:
  - EDI/400: $6,000 to $28,000 (tier pricing based on computer model)
  - EDI/*e*: $10,000 to $60,000 (tier pricing based on the number of document relationships
  - EDI/36: $5,700
  - EDI/38: $9,000

- Premenos provides third-party network communications modules for both public and proprietary networks. Users can purchase modules as single units or buy a module that supports all communications protocols.

QMAIL, introduced in early 1992, is an electronic mail product for the IBM AS/400.

- The product was designed with an open systems architecture. Connectivity modules currently in development will support AACP, TCP/IP, Network Support, LAN, and OSI X400.

- QMAIL is designed to integrate easily with EDI/400.

- The product ranges in price from $1,500 to $10,000, with tier pricing based on the number of users.

5. Alliances

In March 1992, Premenos signed an International Software Marketing Agreement with IBM under which IBM-US and Premenos will jointly market Premenos' EDI/400™, EDI/38™, and EDI/36™ electronic data interchange (EDI) data communications and translation software products. The agreement calls for Premenos, the original developer of IBM's DataInterchange midrange EDI translation software, to offer its EDI products as part of IBM's Cooperative Services Partnership. Premenos incorporated the features of the IBM programs with its own EDI programs. IBM announced it would withdraw from marketing its DataInterchange products. Premenos has offered current licensees of DataInterchange products a no-charge license for the same model of Premenos' EDI products. Premenos is providing all maintenance and technical support for the software product line, which is being marketed by Premenos, IBM, and IBM business partners.
In August 1992, Premenos announced that IBM will distribute and support Premenos' EDI translation software for the AS/400 and RS/6000 (EDI/400 and EDI/*e*) in 12 European countries and Canada, broadening IBM's position with Premenos.

In addition to its marketing agreements with IBM, Premenos has comarketing relationships with various leading software vendors, including J.D. Edwards, Data 3, and Software 2000.

CC
Price Waterhouse

1801 K Street
Washington, D.C. 20006

1992 EDI and Re-Engineering Revenues: $20 million

1. Description of Principal Business

Price Waterhouse is a leading management consulting organization focusing on all aspects of enterprise integration. It has been one of the foremost consulting firms in EDI with a stable of approximately 15 EDI specialists. In the 1991-1992 period, PW merged its EDI practice with its Enterprise Re-Engineering practice, because as Tom Colberg, the EDI practice leader said, all EDI projects turned into re-engineering projects and vice versa.

2. Markets Served

PW typically takes on large EDI/re-engineering projects from feasibility studies in the five- to six-digit fee range to systems integrations in the seven digit range. It has worked on many government EDI projects including projects for the Veterans Administration, CALS, and many port authority projects. Many of its EDI consultants are active in EDI standards bodies, both ANSI X.12 and EDIFACT.

3. Evaluation

PW is a premier EDI professional services firm. Their EDI consultants have experience, are well connected in the industry, are active in standards bodies, and are frequent speakers at conferences. The company has a quality reputation.

DD
RAILINC Corporation

50 F Street, N.W.
Washington, D.C. 20001
(202) 639-5580

Henry W. Meetze, President
Subsidiary of Association of American Railroads
Total Employees: 130
Total Revenue, Fiscal Year End 12/31/90: $15.3 million

1. Description of Principal Business

RAILINC[R], founded in 1982, provides network services—including EDI and industry data bases—and software products to the transportation industry. Clients include rail, ocean, and motor carriers; manufacturers; and distributors. RAILINC is the data processing subsidiary of the Association of American Railroads (AAR). RAILINC's 1990 revenue of $15.3 million includes approximately $8 million from AAR and its members.

2. Markets Served

RAILINC is a for-profit subsidiary and pursues business opportunities in non-rail industries. Marketing efforts are directed primarily at rail customers and suppliers. Network subscribers include all major rail carriers, as well as manufacturers, distributors, and ocean and motor carriers. Virtually all of RAILINC's revenue is derived from North America.

3. Evaluation

RAILINCis more of a captive processing service for the railroad industry than a full service VAN aggressively marketing across industries. As such it is not a competitor to the full service VANs, except that it serves a specific niche that these VANs might be able to serve. Nonetheless, Railinc is well managed and provides excellent services to its clientele.

4. Products and Services

Approximately 80% of RAILINC's 1990 revenue was derived from network services and 20% from software products.

RAILINC's network services include the following:

- The CLM Collection Service electronically collects Car Location Messages (CLMs) from most major rail carriers in North America and provides shippers with a single source of CLM information.

  - The service is targeted to rail shippers with owned or leased fleets of any size, consignees, shippers' agents, and trucking companies.

  - There are currently 70 users.

- The Data Exchange System consolidates car hire or car repair bills from over 95 railroads and provides them to rail car owners in computer-processible form.

  - Over 90% of all car hire allowances and car repair bills are reported to RAILINC's Data Exchange System.

  - There are currently over 200 users of the system.

- RAILINC's telecommunications network is currently used for EDI transmissions by over 400 clients, including rail carriers, manufacturers, ocean carriers, and trucking companies.

  - As a RAILINC subscriber, a customer can communicate electronically with any other subscriber—including rail, ocean, and motor carriers; manufacturers; and distributors.

  - Documents frequently exchanged by subscribers include purchase orders, invoices, shipment tracing messages, bills of lading, freight bills, and administrative messages.

- Data bases maintained by RAILINC include the following:

  - TRAIN II^{R} (Telerail Automated Information Network) is an international freight car data base. TRAIN II collects information on freight car, trailer, and container movements across the U.S., Canada, and Mexico. Processing over 850,000 records per day, TRAIN II serves as the official source of interchange information for car hire calculation. There are currently over 100 subscribers to this service.

  - UMLER^{R} is a computerized version of the Official Railroad Equipment Register. This data base contains information on the physical characteristics of more than 3 million registered freight cars, trailers, and containers.

- The Reload Fleet Management service is a computerized railcar tracing and pool management service that automatically collects CLMs and TRAIN II data and locates the appropriate rail car for the next load using the shortest possible distance. There are currently seven clients using this service.

RAILINC offers several microcomputer software products for use with its network services. The products are available for IBM PC/XT, AT, PS/2 and compatible microcomputers and include the following:

- CLM/PC Tracing Software assists shippers in tracing rail shipments. CLM/PC collects CLMs through RAILINC's network and sorts and stores the information based on the requirements of the user. There are currently 20 installations of the software.

- CRB/PC, introduced in 1988, provides mechanized car repair billing procedures and electronic access to RAILINC's Data Exchange. There are currently 10 installations of the software.

- TRUMPS[R] offers electronic access to RAILINC's TRAIN II and UMLER data bases. Optional EDI capabilities permit the exchange of bills of lading, waybills, and administrative messages. There are currently 100 TRUMPS users.

- RAILINC also offers asynchronous and bisychronous PC communications packages that permit companies to communicate with RAILINC's network.

RAILINC's Short Line Management System is a software product designed specifically for small rail carriers.

- The software automates general accounting and transportation accounting functions through the following modules, which may be purchased separately or as a complete system:

  General Business:
  - Accounts Payable
  - Accounts Receivable
  - Fixed-Assets Accounting
  - General Ledger
  - Inventory Control
  - Payroll

  Transportation:
  - Car Hire Payables
  - Car Hire Receivables
  - Freight Bill Processing
  - Interline Freight Settlements
  - Waybill Tracking
  - Outbound Waybill Processing

- The software runs on IBM PC/XT, AT, PS/2, and compatible microcomputers.

- There are currently 15 users.

5. Facility

RAILINC maintains IBM computers at its data center in support of its various network services. Clients may access RAILINC's network via dial-in and dedicated leased lines.

EE
Sprint Corporation

P.O. Box 11315
Kansas City, MO 64112
(914) 624-3000

William T. Esrey, Chairman & CEO
Public Corporation, NYSE
Total Employees: 43,200
Total Revenue, Fiscal Year End 12/31/91: $8.8 billion

1. Description of Principal Business

Sprint, founded in 1899 as United Telecommunications, Inc., owns various subsidiaries that provide local communications services, domestic and international long-distance voice and data communications services, telecommunications products, and directory publishing services. Information services provided by Sprint include network services and software products.

As one of the nation's three major long-distance companies, Sprint designed and built the first nationwide, 100% digital, fiber-optic network for voice, data, and video transmissions in the U.S. Sprint operated as United Telecommunications, Inc. until February 1992 when it changed its name to Sprint Corporation. The name change followed United Telecom's January 1992 acquisition of the remaining 19.1% interest in US Sprint Communications Company from GTE Corporation.

Company Description

Sprint's current organization includes the following units:

- The Long-Distance Division, with $5.4 billion in annual revenues, serves over six million customers. Sprint provides domestic voice and data communications services across certain specified geographical boundaries, as well as international long-distance communications services. The division serves 100% of the world's direct-dial countries, is a leading suppler of worldwide messaging services and systems, and operates the world's largest public data network—SprintNet[SM].

  - The Major Accounts Group, based in Atlanta, services large business customers, government, and hospitality customers. It includes the Sprint Business Market Group and the Sprint Government Systems Division.

  - The Business Services Group, based in Kansas City, services small and medium business customers, and provides carrier services.

- The Consumer Services Group, based in Kansas City, services residential customers.

- Sprint International, based in Reston, VA, was formed in January 1990 from the combination of US Sprint Communications' international voice division and Telenet Communications Corporation. Sprint International markets voice, data, and video-conferencing, along with networking, support, and management services to international organizations.

2. Markets Served

Sprint's customers include commercial and government organizations, as well as consumers. Sprint operates local telecommunications services in Florida, Indiana, Kansas, Minnesota, Missouri, Nebraska, New Jersey, North Carolina, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, Virginia, Washington, and Wyoming. International offices are in Australia, Belgium, Canada, France, Germany, Hong Kong, Israel, Italy, Japan, Korea, Mexico, the Netherlands, Norway, Puerto Rico, Russia, Spain, and the U.K.

3. Evaluation

Sprint is one of the few service providers today that can offer voice and data (including EDI) services to its customers in a "one stop shopping" package billable under a single invoice. However, it is more focused on providing voice and public data transport services than specifically EDI services. EDI services require intensive, focused marketing to defined trading communities. Sprint has so far not ventured into this more focused marketing effort instead relying on the fact that it can provide basic EDI store-and-forward services when the customer asks for them. Sprint is reselling EDI switching software to its affiliates abroad and is installing EDI capability in a telephone/data network contract in Guang Dong province, China. In the future, it may be able to provide international EDI services to national EDI service providers.

4. Products and Services

The following discussion will focus on the network services and software systems provided by Sprint.

Network Services:

Sprint owns and operates SprintNet, the world's largest public data network, which allows customers to link host computers, terminals, workstations, and PCs together to perform a range of applications.

- The network is managed 24 hours a day from Sprint's Network Control Center in Reston (VA).

- SprintNet operates in over 100 countries. Connect options include:
  - DataCall Plus℠, for global dial-up access to host computers for asynchronous and X25 applications at 300 to 9600 bps
  - Multidrop Plus, for worldwide dedicated access to IBM applications with high-speed virtual memory multidrop connections
  - LAN Reach℠ X25, which integrates geographically dispersed LANs into a single enterprise-wide network
- Virtual Private Line service offers dedicated host-to-host synchronous data communications between international locations for a fixed monthly fee.
- Sprint's CLEARLINE℠ digital private line services provide unlimited availability between locations 24 hours a day, at a flat monthly rate.
- Sprint 56 switched digital services, provided to virtual private network customers, allow simultaneous transmission of voice, high-speed data, and video over the Sprint circuits.
- During 1991, Sprint became the first of the major carriers to offer nationwide public frame relay data service and the first carrier to announce two levels of service—usage-based and fixed price. Its first frame relay commercial customers are W.J. Schafer & Associates and Ernst & Young.
- SprintNet can also provide wide geographic access to private networks.

SprintFAX℠ fax services permit broadcast distribution (sending a fax to multiple locations) and document retrieval via fax from an 800 or 900 number.

SprintMail℠ Messaging Services includes a family of electronic mail services that allows the user to send, receive, and file messages 24 hours a day from a terminal, PC, or communicating word processor. Messages are transmitted for SprintNet.

- SprintMail Fax allows messages to be sent from a desktop PC or workstation to a fax machine
- SprintMail Telex allows the exchange of information with domestic or international telex subscribers from a PC, word processor, or data terminal.
- SprintMail Post delivers electronically input messages as high-quality, laser-printed mail, in two days or less, anywhere in the continental U.S.

- Sprint Information Connection provides access to various public and private on-line information data base services.

- Sprint EDI Services permit the exchange of business documents electronically with trading partners worldwide. Sprint is also a reseller of Harbinger EDI software.

Sprint has designed, developed, and installed more than 200 large-scale private networks throughout the world. The company has also pioneered hybrid network solutions that combine public and private facilities.

GLOBAL FON is a strategic marketing alliance between Sprint, Cable & Wireless, Hong Kong Telecom, Mercury Communication in the U.S., Unitel and Teleglobe in Canada, PTT Telecom Netherlands and other participants to provide one-stop sales and customer service for global telecommunications to multinational customers in the U.S., Canada, the U.K., Hong Kong, Japan, the Caribbean, and other key business centers.

- Customers in one participating country can extend their private or public network to any or all other participating nations, integrating voice, data, and video on a global basis.

- SprintNet serves as the U.S. segment of GLOBAL FON services. Sprint's global services are linked by PTAT-1, the transatlantic private cable, and the North Pacific transpacific cable.

- GLOBAL VPN, the global (multilateral) virtual private network, is currently available to the U.K. and Hong Kong. Current Sprint GLOBAL VPN clients include Rockwell International, Grand Metropolitan plc, DEC, and Esso (Exxon's U.K. subsidiary).

Sprint's Government Systems Division provides a range of voice, data, and video services to more than 34 federal government agencies under the FTS2000 contract, and to other government agencies through more than 200 non-FTS2000 contracts. Sprint provides 40% of the FTS2000 network.

Sprint also offers individualized service packages tailored to specific markets as follows:

- SIGN℠ (State Interconnected Government Network) links state governments and universities nationwide through a software-defined, multistate network. Member institutions benefit by integrating voice, data, and video services over digital telephone lines, at voice rates.

- COSINE℠ is a software defined network that links private universities to SIGN.

- HANDS[SM] (HealthCare Applications Network Delivery System) offers voice, data, image, and video communications services to medical practices.

- The Hospitality Connection[SM] is a single-vendor solution for the hospitality industry.

- University Connection[SM] offers a telecommunications management system for any size state or private campus.

- SAFE BLOCK[SM] is an integrated prison telephone control system.

Network Software and Systems:

Sprint's TP5000 Network Management Systems (NMS) are integrated systems providing configuration, diagnostics, real-time monitoring, network access control, and software table loading functions for Sprint's line of network systems products.

- TP5000 NMS, based on OSI, can be used as an independent system in a purely dedicated network environment or can be connected to SprintNet.

Insite Executive[SM] is a UNIX workstation-based customer-premises platform that provides for integrated network management Sprint voice and data services from one workstation.

Recent contracts awarded to Sprint include the following:

- A three-year contract with Grumman for voice and data services

- Providing data communications services for Unilever's offices in 15 European countries

- Providing Apple Computer with a Virtual Private Network

- A five-year contract with FTD to provide voice and data services worldwide

- During 1991, Sprint provided China with its first Telemail[R] electronic messaging systems, in addition to a packet-switched public data network and direct voice services.

FF

Sterling Software, Inc.—EDI Group

4600 Lakehurst Court
P.O. Box 7160
Dublin, OH 43017-0760
(614) 793-7000

Warner Blow, Group President
Operating Group of Sterling Software
Total Employees: 450
Total Revenue, Fiscal Year End 9/30/92: $56 million

1. Description of Principal Business

Sterling Software's EDI Group, a division of Sterling Software Inc. (Dallas, TX), is one of the leading EDI software and service vendors in the world. It specializes in EDI network services, software products, and professional services, especially education. Sterling has been offering third-party EDI network services through its ORDERNET Services Division since 1975 and has approximately 10,000 U.S. and Canadian network service clients representing a variety of industries.

The EDI Group was created in October 1990, and includes the following divisions:

- Sterling's existing ORDERNET Services Division, headquartered in Dublin, OH, provides EDI network services and communications, EDI-related data base services, and EDI education services.

  The software products division, which sells a line of software products for every platform including PC, midrange, IBM mainframe, and a UNIX model.

- The ORDERNET International Division, headquartered in London, supports Sterling's EDI business overseas.

- The EDI Labs Division, headquartered in Dublin, OH, provides technical support for the software, ORDERNET, and international divisions. The division is also responsible for the development and second-level support of all software products and systems for Sterling's EDI network services and for EDI software users. The EDI Labs Division focuses on the development of the next generation of EDI software and systems.

- The Directions Division (formerly part of Sterling's Applications Software Group), headquartered in Dallas with 50 employees, provides check processing and electronic payments software products for banks

with IBM and compatible mainframes. These operations were brought into the EDI Group as part of Sterling's strategy to provide EDI/EFT payment software and services to banks and corporations.

2. Markets Served

Sterling has strong, and in some cases dominant, market shares in network services in the hardlines (hardware retail store), grocery, and pharmaceutical distribution industries. It is targeting the broader retail markets, transportation, and manufacturing sectors.

Altogether, Sterling provides EDI network services and software products to customers in the pharmaceutical, grocery, hardware and housewares, retail, medical/surgical distribution, mass merchandising, warehousing, transportation, automotive and heavy equipment, petrochemical, paper, and packaging industries.

In its EDI software product line, Sterling is well established across industries with its mainframe, midrange and PC products. Also, it has a solid customer base for its banking software.

Sterling's customer base is entirely in North America. Although it has a VAN alliance in Japan and has opened offices in London and Canada, its international business is in a very early stage of development.

INPUT estimates that approximately 56% of the EDI Group's fiscal 1992 revenue was derived from software products and associated support services and 44% from network services.

3. Evaluation

Sterling Software is one of the strongest EDI players in the world today. It has consistently brought quality products and services to EDI user organizations. It has also maintained a profitable business serving the EDI market, making it one of the most, if not the most, financially viable EDI provider. Sterling wants to expand its market offering and identity from being strictly an EDI vendor to being a more comprehensive solutions provider of electronic commerce (which includes data base services, electronic mail, enhanced facsimile services, point-of-sale applications, and others) and possibly systems outsourcing. This is a critical transition for Sterling to take, requiring it (1) to make more alliances with other IS providers than it already has, (2) to make investments in new products and network services and (3) to possibly deviate from its strict quarterly positive profitability standards. It will be a tricky transition to take with the soft economy of the nineties and the dynamic electronic commerce marketplaces where one's customer base tends to consolidate after a certain critical mass.

Strengths

Offers Software, Network, and Professional Services. A full complement of EDI technology components makes Sterling a full-service, "one stop shopping" EDI vendor.

Good Technology. Sterling has received high customer satisfaction ratings.

Profitable. The company's pragmatic approach to developing products and markets has kept it profitable. Sterling corporate has a strict mandate for its divisions to be profitable.

Young Company/Aggressive Management. Sterling has grown rapidly since the late 1980s, resulting in a young corporate culture. This culture has served it well in sales, support, product development, and innovative business strategy.

Market Share. Sterling has chosen its markets and has been successful in dominating them, partly due to successfully marketing around "hubs" and their respective "spokes."

Weaknesses

Needs to Expand Product/Service Offering. Sterling needs to become a solutions provider rather than strictly an EDI vendor. This involves offering vertical market professional services to customers as well as other communications capabilities such as electronic mail, enhanced facsimile, community data bases, and imaging. Sterling is taking action in this regard.

No voice capabilities. This may or may not prove to be a setback. The main drawback now in lacking voice services is that some of Sterling's network service competitors (namely, AT&T, U.S. Sprint, Ameritech, Bell Atlantic and, internationally, British Telecom) offer voice services in addition to EDI services.

Needs International Services. Sterling needs a presence in the major trading areas of the world. Placing the founder of the Ordernet service, William Plumb, in charge of developing Sterling's international business is a positive move. AT&T, IBM/Advantis, GEIS, BT North America, and EDS are EDI value added network service providers who have the edge on Sterling in the international services arena.

4. Products, Services, and Prices

Network Services:

Sterling offers EDI network services under a variety of fee schedules. The general schedule is shown in Exhibit III-5.

EXHIBIT III-5

Sterling's EDI Network Services
Fee Schedule (U.S.)

Service Value-added communications between participating senders and receivers of electronically transmitted trade documents.	
Initialization Fee A one-time charge due with the Service Agreement that is applied to communications testing, documentation and the attendance of two people at an ORDERNET Services installation workshop.	*$300.00*
Monthly Base Fee The monthly charge for each participant for mailbox service. The fee commences thirty (30) days after the first test transmission, or when testing is completed if earlier, and no later than 120 days from contract acceptance date.	
Asynchronous Mailbox	*$ 60.00 per month*
Synchronous Mailbox	*$ 110.00 per month*
Connect Time Fee A per-minute charge for the time a user is connected (signed-on) to the ORDERNET Services EDI system.	*$.48 per connect minute*
Processing	
A. Data sent	*$.0085 per data segment*
B. Data received	*$.0085 per data segment*
C. Document charge	*$.05 each*
Special Document Pricing ANSI X12 Quick Response Documents: 846 Inventory Advice, 852 Product Activity Data, and 867 Product Transfer and Resale	
A. Data Sent	*$.003 per data segment*
B. Data Received	*$.003 per data segment*
C. Document Charge	*$.05 per document*
EDI/Fax Document Delivery (Optional)	
A. Document Charge	*$.50 per document*
B. Conversion Charge	*$.01 per data segment*
C. Fax Transmission Charge	*$.48 per minute*

Source: Sterling U.S. Fee Schedule of October 1, 1991

EXHIBIT III-5 (CON'T)

Sterling's EDI Network Services
Fee Schedule (U.S.)

Other Optional Services

A.	High-speed communications: 9600 bps	$ .75 per connect minute
B.	In-network format translations	$ 25.00 per month
C.	Flat file format translations	$ .015 per data segment
D.	Public network interconnect service	$ 25.00 per month/per network
E.	Private network surcharge	$ .0085 per data segment
F.	Additional copies of *User Guide*	$ 75.00 each
G.	Mailbox dump and/or data restoration	$ 30.00 per request
H.	Re-installation and Communications Testing	$ 50.00 per hour
I.	Installation workshop	$ 295.00 per person
J.	Mail Slots	$ 5.00 per month/per slot
K.	Mailbox status report	$ 10.00 per request
L.	Mail Slot 060 status report	$ 1.00 per request
M.	Carbon copy	$ .50 per destination
N.	Envelope Conversion	$ .05 per envelope
O.	EDI/Fax Wake-up Service	$ 1.00 per fax

Discounts

Option A: For the selection of a one-year standard agreement with no monthly minimums, the monthly processing charges of a customer will be adjusted as follows:

Processing charges	*Incremental discount*
Less than $ 1,000	0%
$ 1,001 - $ 4,000	10%
$ 4,001 - $ 7,000	20%
$ 7,001 or more	30%

Option B: For the selection of a two-year standard agreement with a $5,000 monthly minimum, the processing charges of a customer will be adjusted as follows:

Processing charges	*Incremental discount*
$ 0 - $ 5,000	15%
$ 5,001 - $10,000	30%
$10,001 - $15,000	40%
$15,001 or more	50%

Discounts are applicable only when invoices are paid within current payment terms (net 15 days).

Source: Sterling U.S. Fee Schedule of October 1, 1991

Other schedules are developed for the specific trading communities of the hardware (hardlines) stores (EagleLink), the pharmaceutical distributors, and the Ports of Tacoma and Seattle (the LINX system). Sterling appears to be experimenting with a more flat rate fee structure that it inherited from its acquisition of the Control Data Corporation's Redi*Net EDI network service.

ORDERNET supports internetwork traffic with BT North America's EDI*NET at no additional user cost. Other internetwork agreements have been established with Kleinschmidt, GE Information Services, ARI Network Services (formerly Agridata), AT&T, Bell Atlantic, CompuServe, Harbinger, IBM Information Network, Infonet, Sears, Sprint/United Telecom, Trade Route/Telecom Canada, Transnet, TranSettlements, and User Base Systems.

Translation between X12, UCS, and industry-specific standards is available through an in-network translation service that uses the same technology as Sterling's translation software products.

ORDERNET offers a media conversion service that permits electronic documents to be converted to hard copy (EDI/LaserMail^{SM} for mailing) or to facsimile transmissions (EDI/Fax^{SM} for delivery to any trading partner's fax machine). These operations allow 100% delivery regardless of a trading partner's EDI capability.

ORDERNET Services offers DOCULINK, a series of communications software packages that are built to emulate the communications protocols used most commonly in micro, mini, and mainframe computers and will, with the appropriate internal or external modem, transmit and receive data with the ORDERNET network.

MarketQuest^{TM}, introduced in 1989, is a data base service that builds on EDI documents, such as purchase orders and invoices, that trading partners send during the normal course of their business. Data base information is released only with prior written approval of the data supplier. MarketQuest enables manufacturers to tap into a system of shared information about market trends, penetration, product acceptance, and markets. MarketQuest is currently offered in the animal and human health markets and the electrical industry.

Software Products:

Sterling's major EDI software products, GENTRAN and TRANSLATOR, provide translation software for mainframe, midrange, and personal computer platforms. The software currently supports the following environments:

- IBM 30XX, 42xx,9370 under MVS and DOS/VSE
- DEC VAX under VMS
- IBM S/36, S/38, and AS/400
- IBM PC and PS/2 families and compatibles
- UNIX

- In March 1992, Sterling announced Hitachi VOS1 and VOS3 versions of TRANSLATOR and a Fujitsu MSP version of GENTRAN to support business operations in the Pacific Rim, Europe, and in the U.S.

Features of Sterling's translation software include:

- The software products translate data from internal fixed-length record formats to variable-length data formats for EDI transmission, and interpret received EDI communications back into internal formats for processing.

- Support for ANSI X12 and its subsets (CIDX, EDX, VICS), UCS, WINS, and TDCC (Motor, Rail, Ocean, Air) standards, as well as EDIFACT, TRADACOMS (U.K.), and ODETTE

- Thorough compliance checking. This checking includes validation of control numbers, transaction IDs, segment IDs, segment sequencing, presence of mandatory segments and elements, minimum and maximum element length, element type, code values, frequency of segments and loops, and interelement dependencies. User exits are available if needed for additional processing.

- Management functions provide extensive auditing and reporting controls. The user has full control of EDI activity, document flow, and functional acknowledgments. Auditing can be done at interchange, group, or transaction level; inbound, outbound, or both.

- GENTRAN can also be used in a corporate gateway environment where the product resides on a central computer and multiple divisions use its processing capability.

- On-line software maintenance (PC or CICS for IBM mainframes) features include:

  - *Trading Partner Profiles*. Dozens of options to customize trading partners include choices of envelopes, acknowledgments, versions, transaction sets, and control numbers.

  - *Advanced Data Mapping*. Mapping is the process by which the application files are defined to the translator. The greatest advances in translation software in the last two years have occurred in this area. The need for external programming by the user is entirely eliminated.

As a productivity tool, on-line mapping has reduced software implementation time by an order of magnitude. The system includes code and data element translation tables, conditional mapping, subfield mapping, and user exits.

- *Standards Maintenance.* The user can now build and maintain individual standards using the existing standards as models. All are facilitated by on-line screens. This is useful for creating "private" versions of standards for individual trading partners.

- *Security.* Each partner profile, map, standard, etc. can be secured by system users to have read-only access, full access, or no access. Production "locks" prohibit accidental disruption of production profiles, maps, etc. Each user has an ID and password, and changes are recorded by the user with date/time stamps.

- *Audit.* In addition to batch audit reporting capabilities, screens allow activity audit by partner by date/time range.

- Initial license fees for the EDI translators are as follows:

IBM Mainframe:	From	$37,000
DEC VAX:	From	$7,500
IBM S/3X:	From	$6,000
IBM AS/400:	From	$7,500
IBM PC/PS2:	From	$1,295

During 1991, Sterling released two mainframe translation products as follows:

- Event Driven EDI allows users to dynamically invoke translation software based on completion of a predefined event.

- Real Time EDI allows users to directly connect to their trading partners and receive confirmations in an on-line CICS environment.

- In February 1992, Sterling and American Software announced a joint agreement to provide business applications incorporating real-time EDI.

GENTRAN Plus for IBM mainframes builds on the strengths of GENTRAN and SUPERTRACS (Sterling's communications engine) to integrate translation, communications, mailboxing, and mapping into a fully automated EDI operation. It can be used to support a corporate EDI gateway environment, managing many different internal clients as well as external EDI networks and/or direct connections.

- GENTRAN Plus supports its own telecommunication lines (2780/3780 and SNA), performs autodial on a scheduled basis, and provides operator screens for controlling communications, restoring transmitted interchanges, viewing EDI data, etc.

- Initial license fees for GENTRAN Plus range from $92,000 to $139,000. The product is available for both MVS and DOS/VSE environments.

During 1991, Sterling introduced GENTRAN/400 Release 5.0, which combined GENTRAN with its SUPERTRACS communications product for the IBM AS/400.

- In December 1991, Sterling and J.D. Edwards & Company (JDE) formed a strategic alliance resulting in the integration of GENTRAN/400 with JDE's family of application products for the IBM AS/400.

- In December 1991, Whittman-Hart, a leading provider of specialty services for IBM midrange computers, agreed to provide demonstration facilities and integration support to users and potential users of GENTRAN/400 EDI translation software.

During 1992, the following packages will be blended into one product—GENTRAN PC:

- Quick*Tran is a micro EDI product combining translation software bundled with asynchronous or bisynchronous DOCULINK communications software and offering a limited number of EDI data formats. The product is targeted to small suppliers of a hub EDI user. Quick*Tran is priced at $1,295.

- Micro*Tran adds a front end that interfaces the user's system with internal applications and eliminates rekeying.

- Pro*Tran is a micro EDI product that provides all the functionality of Micro*Tran plus a developer's toolkit that allows users to create their own custom screen and print formats to suit an unlimited range of specific trading requirements. Pro*Tran can be used as a standalone product or on the user's PC, or interfaced with applications on their host computer.

Support Services:

ORDERNET provides customer training on network installation and various EDI software products. Although these services are still available, Sterling also created the EDI Center in 1985 to provide more generic EDI through various delivery modes.

Options include:

- Training at EDI Center classrooms or at customer sites

- STEP (Self-Tailored Education Program), which custom designs training modules

- The EDI Center video library

Topics include Team EDI, The Business Side of EDI, The Technical Side of EDI, Trading Partner Expansion Strategies, Building Audits and Controls, The EDI Payback, Mapping and Standards, and Twelve Steps to Successful EDI Implementation.

The EDI Center has trained over 12,000 people from 9,000 organizations.

ORDERNET Customer Services representatives assist clients with EDI implementation and ongoing support. ORDERNET management maintains that the ORDERNET Division occupies the premier position in the industry regarding customer support.

The Very Important Partners (VIP) program assists major purchasers to bring their trading partners into the EDI environment.

Directions Division:

The Directions Division, which contributed about $10 million to fiscal 1992 revenue, provides software products to the banking and finance industry for check-processing applications.

- The VECTOR product family is designed for IBM mainframes and is used by commercial banks, savings and loans, credit unions, and finance companies.

  - VECTOR products (VECTOR 3-12 and VECTOR 3000-5000) are available for bulk file/on-line fine sort, on-line adjustment processing, on-line returns/exceptions processing, on-line CPCS reconciliation/balancing, on-line bank reconciliation, on-line collections processing, transaction analysis, general inquiry and research, signature verification, check clearing and availability, and cash letter collection.

  - New products scheduled for 1992 include VECTOR CONNEXION, an EDI banking system supporting EDI payment origination, remittance, delivery, lockbox merge, and EDI translation; and the VECTOR Electronic Presentment System, which is designed to control operations associated with electronic check presentment.

  - VECTOR products range in price from $12,000 to $112,000. Over 450 North American banks and other financial institutions have installed over 1,000 VECTOR products.

5. Alliances

ORDERNET has over 60 strategic partners. Important ones include those with GTE Health Systems (linking hospitals), American Software (for event driven EDI linkages with manufacturing software) and J.D. Edwards & Company. It is endorsed by the American Hardware Manufacturer's Association to provide network services through the Eaglelink document standard. Recent alliances include the following:

- In January 1992, Sterling and Information Access Inc. (IAI) entered into an agreement allowing IAI to market and support ORDERNET's EDI network services as an integral component of IAI's computer systems and services to food brokers.

- In January 1992, Health Services Corporation of America (HSCA) agreed to recommend ORDERNET services to its members as an EDI software and services provider.

- In May 1991, Georgia Freight Bureau, Inc., a large shipper and transportation management association in the Southeast, announced it would recommend Sterling's EDI software and services to its members.

Internationally, Sterling has agreements with TradeLink in Australia (establishing the first EDI link between Australia and North America) and Global VAN Japan (establishing Global VAN as a reseller for EDI software and services in Japan to firms engaged in trade with North America).

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St. Paul Software

754 Transfer Road
St. Paul, MN 55114
(612) 641-0963

Gary Anderson, President
Private Company
Total Employees: 16
Total Revenue, Fiscal Year End 12/31/91: $1.1 million*
*INPUT estimate

1. Description of Principal Business

St. Paul Software (SPS), founded in 1981, markets application software products, processing, and associated support services for EDI and electronic data collection (bar code reading and printing) to the manufacturing, distribution, and retail industries and government agencies.

2. Markets Served

SPS has a large customer base in the railroad industry, where St. Paul got its start in 1985, when it developed a custom system for a supplier to Burlington Northern Railroad. Recently, St. Paul has been contracted to replace the Railinc PC software for Railinc customers. SPS also has many customers in the automotive industry. It has worked with Lawrence Livermore Laboratories (Livermore, CA) in developing the Electronic Commerce project for the U.S. Military and Federal Government. SPS is a general EDI software supplier and has customers across industries. SPS now supports clients in the U.S., Canada, Mexico, and East Asia, where SPS has a reseller contract with Control Data.

3. Evaluation

Strengths

Customer Driven/Responsive. St. Paul has been very attentive to customer needs by creating, for example, a processing center that provides EDI-to-facsimile conversion services, and is developing voice processing features in EDI translation.

Good Management. Despite its limited resources, St. Paul has managed to capture large contracts and customers and seems to be in many bid/sales situations for EDI.

Good Technology/UNIX Offering.

Solid Portfolio of EDI Software and Services. Many price points, many platforms.

Weaknesses

Limited Resources. St. Paul is limited in its capacity to grow by a lack of financial resources.

4. Products, Services, and Prices

Approximately 38% from the company's revenue is derived from EDI software and 1% from bar code collection software. The remaining 61% of revenue is derived from EDI processing and professional services.

Interconn: PC-DOS EDI translation software. $1,995 plus $399 for annual maintenance.

Datatran: UNIX-based translation software. Priced according to CPU.

X386	$4,500
NCR, low end HP 3000	$7,000
Upper mini	$10,500
Sequent, Pyramid, Sequoia	$18,000

Gateway: Combines the Datatran translation software with communications software that controls scheduling and allows for event-driven communications with the application. Includes a mapping facility and store-and-forward mailboxing capability. Priced according to CPU as follows:

A: $9,000
B: $14,000
C: $21,000
D: $25,000
E: $36,000

EDI/FAX Server, introduced in 1991, provides connections for non-EDI-capable trading partners with an automated EDI-to-fax processing platform. Pricing varies depending on options and hardware platforms.

Auto-ID, introduced in 1989, is an option that permits the scanning of shipping labels as shipments are being loaded. Auto-ID automatically generates ANSI X.12 Advance Ship Manifests. Pricing varies depending on options.

EDI Service Bureau, introduced in 1989, enables users to be viable trading partners regardless of transaction volume. With minimal investment, low volume or key account processing is handled by SPS. Data exchange is provided with fax, remote data entry, or computer-to-computer options.

Other services provided by SPS include EDI educational seminars, consulting, installation, product training, custom integration, and hotline technical support.

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Success Systems, Inc.

3577 Parkway Lane
Norcross, GA 30092
(404) 840-2000

Howard Spiller, Executive Vice President
Private Company
Total Employees: 28

1. Description of Principal Business

Success Systems develops and markets computer systems for the food broker industry. The company specializes in AT&T hardware and offers systems based on AT&T 3B2 minicomputers and 80386-based microcomputers.

Success Systems' principal product, Success PRO 2000™, is an integrated system for food brokers. System features include order entry, order message generation, sales statistics, sales analysis, budgeting, promotion and commission calculations, short-ship reports and new placement reports.

The company has developed EDI software that is included with the Success PRO 2000 series. The system supports UCS standards.

Success Systems was founded in 1976. The company has 28 employees and is privately held. In addition to corporate headquarters in Atlanta, the company has a sales office in Kansas City, MO.

II

Supply Tech, Inc.

1000 Campus Drive
Ann Arbor, MI 48104
(313) 998-4000
Fax: (313) 998-4099

Ted Annis, CEO
Gail Jackson, President
Private Company
Total Employees: 85
Total Revenue, Fiscal Year End 12/31/92: $10 million*
*INPUT estimate

1. Description of Principal Business

Supply Tech, Inc., founded in 1984 by Ted Annis and Gail Jackson, initially developed IBM PC-based EDI software for the automotive industry. Supply Tech is expanding its markets to cover other industries that use EDI throughout the world. The company's products focus exclusively on EDI and bar coding.

2. Markets Served

Supply Tech markets EDI software across all industries yet maintains large customer bases in the automotive, manufacturing, transportation, financial, government, grocery, retail, warehousing, aerospace, leasing, health care, education, and computer industries.

As of the end of 1990, STX12 was installed at over 4,500 sites, compared to over 3,000 sites at the end of 1989, 1,500 sites as of mid-1989, and 550 sites as of mid-1988. Approximately 700 installations are part of the Caterpillar, Inc. EDI program whereby seven EDI documents are exchanged between Caterpillar and its suppliers. Other users include AT&T, IBM, General Motors, Jordache, Ford Motor Company, Businessland, Hitachi, the U.S. government, other Fortune 500 companies, and various small- and medium-sized companies.

A majority of Supply Tech's revenue is derived from the U.S. and Canada. The company also markets its products in Europe, Mexico, and South America.

3. Evaluation

Supply Tech is one of the most successful EDI companies today. It has the largest installed base of all vendors of PC EDI software. Its strong marketing and sales organization puts it consistently in the major industries.

Strengths

- Marketing and Sales Organization. Supply Tech seems omnipresent. It has the largest installed base. It is doing well overseas, especially in the Latin American markets, which are emerging EDI marketplaces.

- Customer Support. Supply Tech has received high user praise for providing good after-sales customer support.

Weaknesses

- Limited product and technology breadth. Supply Tech began in EDI with PC software. In 1991, it introduced a mainframe product. Nevertheless, it is focused on the PC market. It has no offer for midrange platforms, nor does it have a UNIX product. Also, it is not a network provider.

4. Products, Services, and Prices

Microcomputer Translation Software

STX[R] (formerly STX12[R]) for the Microcomputer, introduced in 1987, is Supply Tech's microcomputer-based general-purpose EDI software product. Priced at $2,295, it includes two overlays (see below). The company provides training ($495 per day) and hotline support ($600/year for a Level 1 System, $780/year for a Level 2 System).

Overlays

To speed and simplify EDI implementation, Supply Tech developed a library of pre-defined, pre-mapped transactions it calls "Overlays." These include thousands of the most commonly used transactions, including those specific to nearly all of the major EDI hubs. Overlays automatically generate the mapping information needed for EDI translation. They are priced from $150 to $300.

Mainframe EDI Software

STX[R] for the Mainframe, introduced in 1990, is available for IBM mainframes running DOS/VSE or MVS using VSAM and CICS.

- STX was ported to the IBM mainframe under a joint agreement with Dana Corporation. The product is compatible with STX for the Microcomputer.

- Pricing for the mainframe version ranges from $19,500 to $39,500, depending on the CPU model. Pricing includes one day of installation.

Bar Code Software

STBAR[R] is Supply Tech's bar code labeling software product for IBM and compatible microcomputers running MS-DOS. STBAR is priced at $1,895.

5. Alliances

Supply Tech is an authorized agent for GE Information Services and BT North America. The company also has marketing agreements with AT&T, MCI, Infonet, and Automatic Data Processing, and participates in the IBM Industry Marketing Assistance Program.

JJ

System Software Associates, Inc.

500 West Madison Street
32nd Floor
Chicago, IL 60661
(312) 641-2900
Fax: (312) 641-3737

Larry J. Ford, Chairman, President and CEO
Public Corporation, NASDAQ
Total Employees: 781 (1/92)
Total Revenue, Fiscal Year End 10/31/91: $149 million

1. Description of Principal Business

System Software Associates, Inc. (SSA), founded in 1981, develops, markets, and supports a software product line known as the Business Planning and Control System (BPCS), which consists of 29 integrated products designed for manufacturing, distribution, and financial applications for IBM AS/400, System/38, and System/36 computers.

- During fiscal 1990, SSA introduced three computer-aided software engineering (CASE) software products, including AS/SET™, a CASE tool designed exclusively for software applications design, development, and maintenance on the IBM AS/400.

- During 1991, SSA introduced an EDI product line for IBM AS/400 environments.

SSA's product strategy incorporates a cooperative processing architecture, compliance with IBM's SAA, graphic user interface capabilities, and seamless integration to other technologies.

SSA's products are currently marketed worldwide through SSA's major accounts division, SSA branch offices, and an Affiliate Business Partner Network of independent companies worldwide. During fiscal 1991, SSA expanded its Affiliate Network to 120 firms located in 53 countries, from a total of 113 firms in 45 countries one year earlier.

2. Markets Served

SSA's revenue is derived primarily from the discrete manufacturing, process manufacturing, and distribution industries. SSA sells and supports its products through its affiliate network, a major accounts organization, and branch offices. The target markets for the BPCS product line include manufacturers with annual revenues ranging from $10 million to $500 million, distributors with annual revenue ranging from $15 million to $500

million, and companies with annual revenues greater than $500,000. The larger companies are often looking for common systems across a number of installations that can be implemented and supported locally. Currently, a significant and increasing portion of sales are to larger companies. To date, SSA has made sales to divisions or subsidiaries of over 300 of the combined Fortune 500 and Fortune International companies.

The target market for SSA's CASE products consists of BPCS target customers as well as other AS/400 users with a need to develop customized software tools. SSA has licensed approximately 51,000 software products to over 5,000 companies worldwide.

In North America, SSA has over 2,800 companies using BPCS, and 400 using AS/SET. SSA's North American direct sales offices are in Chicago, Atlanta, Boston, Louisville, and Milwaukee. SSA has a local presence in more than three dozen other North American cities through its BPCS and AS/SET affiliates.

SSA Europe has over 1,000 BPCS clients spread across 15 European countries and over 300 AS/SET clients. Headquartered in the U.K., SSA Europe also has branch operations in the Netherlands and Spain, and additional SSA staff located in France, Germany, and Sweden. SSA Europe also has 40 affiliates, mostly also IBM agents.

SSA Pacific has installed BPCS at over 700 sites in Australia and New Zealand and has 20 AS/SET clients. SSA Pacific has direct sales offices in Sydney, Melbourne, and New Zealand and seven affiliates in other parts of Australia, Papua New Guinea, and Fiji.

In October 1990, SSA's Australian subsidiary, SSA Services Pty, sold a 15% equity interest to IBM Australia Limited for approximately $1 million.

SSA Asia has over 500 BPCS and 150 AS/SET clients. Headquartered in Singapore, SSA Asia also has 28 affiliates in Malaysia, Thailand, Indonesia, Sri Lanka, Hong Kong, Taiwan, Korea, China, and the Philippines.

SSA Japan has over 50 BPCS clients and several AS/SET clients.
SSA Latin America has 250 BPCS clients and 30 AS/SET clients. The unit is headquartered in Buenos Aires and has a satellite office in San Juan.

Approximately 41% of SSA's fiscal 1991 revenue was derived from the U.S. The remaining 59% was derived from various international sources.

3. Evaluation

SSA has come late to the EDI market but given its strengths in (1) applications development and integration, (2) international markets and (3) financial resources, it can very quickly become a formidable competitor in EDI, especially in the midrange market. INPUT believes the midrange market will continue to expand as, in some respects, the midrange platform is ideal for conducting "production-level" EDI. The midrange platform is the natural migration destination for both the EDI user who started on the PC and needs to add capacity or the EDI user that started on the mainframe but wants to downsize and run divisional EDI. Midrange computers are heavily entrenched in the transportation, manufacturing and distribution industries—the three mainstream EDI marketplaces. SSA's strength in the midrange applications market will give it a much better "foot in the door" than its chief competitors, Premenos, Sterling Software, and Blue Rainbow Software International.

4. Products, Services, and Prices

SSA's primary software product line—known as the Business Planning and Control System (BPCS)—consists of 29 integrated products designed for manufacturing, distribution, and financial applications for IBM AS/400, System/38, and System/36 computers.

SSA's current BPCS products include the following:

- Manufacturing Products
  - Master Production Scheduling identifies production planning actions that need to be taken in response to day-to-day events and ties overall business planning to detail operations.
  - Material Requirements Planning (MRP) identifies purchasing and production scheduling actions that are needed in response to day-to-day events.
  - JIT/Repetitive Manufacturing provides support for just-in-time manufacturing techniques and support for repetitive process manufacturers (not available for the System/36).
  - Manufacturing Data Management allows the retrieval and use of product structure and routing information for planning and costing needs.
  - Shop Floor Control provides current status of jobs, work-in-process, and production activity to permit detailed planning and scheduling.
  - Capacity Planning identifies potential capacity bottlenecks and backlog problems so that adjustments can be made.

- Cost Accounting controls purchasing, jobs, and manufacturing cost information.

- Performance Measurement provides feedback and accountability in several key management areas to allow executives to monitor and compare the performance of their business against plan (not available for the System/36).

- CIMPath™ automates data collection and updates from the plant floor or distribution center via scanners, magnetic card readers, hand-held devices, voice input, scales, and other devices (not available for the System/36).

- Advanced Process supports process industry companies in application areas such as lot level potency, batch balancing, physical versus theoretical quantities, full notes subsystems, lot tracking, and traceability.

- Multi-Facility Support, introduced during 1990, allows configuration of BPCS applications and transmission of operation data across a network of AS/400s and supports centralized and decentralized operating functions.

• Distribution and Logistics Products

- Inventory Management allows processing of information on finished goods, work-in-process, and raw material inventory and provides summary and detail analysis on demand for both accounting and production control purposes.

- Distribution Resources Planning (DRP) identifies demand on distribution centers and resulting impact on resupply facilities and presents transportation loading and scheduling information (not available for the System/36).

- Order Processing processes entry and disposition of customer orders; provides automatic pricing, inventory allocation, and information for production and accounting projections; and allows printing of customer acknowledgments and shipping documents.

- Billing and Sales Analysis allows customer orders to be billed after shipment. Invoices are printed and inventory, sales, and accounting information is maintained automatically.

- Purchasing links planning, requisitioning, receiving, and inspection to inventory stocks to permit evaluation of vendors and purchasing performance, and prints purchase orders and receiving documents.

- Forecasting provides for statistical forecasts of future customer sales.

- Promotions and Deals provides management of marketing promotion programs (AS/400 only).

• Financial Products

- General Ledger and Financial Retrieval System provides for accumulation of financial information to support accounting functions, allows analysis of information for management decision making, and allows for user-defined financial reporting.

- Accounts Payable provides for the control and processing of payables information.

- Accounts Receivable collects and disseminates cash flow information aimed at accelerating collection, assessing credit, and reducing bad debt.

- Multi-Currency provides multiple currency operations for the financial, inventory, order processing, billing, and sales applications.

- Currency Translation allows consolidation, reporting, and analysis of multiple currency financial data.

- Payroll (U.S. only) provides control and processing of payroll information with tax calculations, supporting all 50 states. The system allows user-defined deductions, prints checks, and produces tax reports.

- Cash Management handles bank drafts, deposits, and notes receivable and payable; and ties together the ledger, sub-ledger, ordering and planning capabilities of BPCS to improve cash use, control, and planning.

- Fixed Assets (U.S. and Canada only) manages and controls all types of property, plant, and equipment (AS/400 only).

• Decision Support Products

- Information Retrieval provides access to the applications data base, and allows technical and non-technical end users to access information from up to 15 files at once, manipulate that information, and output it in the form of reports, on-line graphs, or file interfaces.

- Business Modeling provides full-function spreadsheet capabilities as well as a direct data base interface to any existing application.

- Electronic Mail allows users to create, send, receive, file, and print communications electronically (not available on the System/36).

During fiscal 1991, SSA licensed over 780 CASE products worldwide, generating revenues in excess of $17 million. SSA currently offers the following CASE software products for IBM AS/400 environments:

- AS/SET ADK (Application System/Software Engineering Technology) accelerates the process of design, generation, and maintenance of applications software for the AS/400 environment. The product ranges in price from $35,000 to $85,000, depending on the number of users and the AS/400 model used.

- AS/SET Integrator™ provides integration between AS/SET and selected front-end workstation-based CASE tools.

- AS/NET™ is a networking product that permits transmission of any type of information among multiple CPUs in an AS/400 network.

- AS/SET IWS is a multitasking workstation-based CASE product that operates either detached from, attached to, or semi-attached to the AS/400.

- AS/SET UCI controls and monitors the sharing of CASE constructs between multiple developers and platforms.

- AS/SET REV has reverse engineering capabilities.

SSA's EDI products are available for AS/400 environments and include the following:

- SSA EDI-SOL supports the translation and communication of EDI messages according to national and international standards, and customization for proprietary message requirements.

- SSA EDI-NET provides the link between the EDI-SOL AS/400 translator and external value-added networks. It supports communication set-up, connection type maintenance, network administration, and system report retrieval functions.

- SSA EDI-TLK provides seamless AS/400 EDI-SOL-to-workstation integration and support for other workstation communication and translation applications. The product allows users to examine, edit, reformat, and maintain files containing EDI messages in packed or unpacked format, and text data.

- BPCS EDIPath integrates the BPCS product line with the EDI-SOL translator and enables EDI messaging within the normal course of BPCS transaction processing.

On January 15, 1992, SSA had 125 affiliate business partners with offices in 53 countries. Of these, 62 affiliates sell BPCS and CASE products, 23 sell PBCS only, and 40 sell CASE products only.

- Affiliates are responsible in their respective territories for marketing and sales and implementation services, including education, project management, and customization.

- SSA provides technical, applications, and sales training; marketing and technical support; and emergency customer service to its affiliates. SSA also takes primary sales responsibility for large accounts.

The entire BPCS product line is available in English, and a substantial portion of the line is available in Dutch, French, German, Ideographic Chinese, Ideographic Japanese, Italian, Korean, Spanish, Portuguese, Swedish, and Finnish.

INPUT estimates that approximately 79% of SSA's fiscal 1991 revenue was derived from applications software products, 20% from client support services, and less than 1% from hardware sales.

5. Alliances

Recent SSA acquisitions/joint ventures include the following:

- In early 1992, SSA acquired its Singapore-based joint venture, Comat Services Pte., and its 70 employees. It now operates as SSA Singapore.

- In September 1991, SSA acquired a 51% controlling interest in a joint venture with SSA Iverica S.A., which serves as SSA's Spanish affiliate.

- In April 1991, SSA entered into a joint venture with the shareholders of a Dutch company, Solid Beheer B.V.

- In July 1990, SSA purchased a 50% interest in a newly formed joint venture, SSA Mid Atlantic, Inc., with its New Jersey-based affiliate, Software Plus, Inc., for $2.5 million in cash.

SSA's primary competitors for its BPCS product line include IBM (MAPICS), American Software, Andersen Consulting, ASK Computer Systems, and Marcam. CASE competitors include Synon.

Fiscal 1991 revenue reached $149.1 million, a 20% increase over fiscal 1990 revenue of $124.2 million. Net income was $16.7 million, compared to $16.4 million in fiscal 1990.

Revenue for the three months ending January 31, 1992 reached $51.8 million, a 45% increase over $35.9 million for the same period in 1991. Net income reached $7.7 million, compared to $6.6 million for the same period a year ago. During the quarter, SSA implemented a change in the method of accounting for software revenue.

KK

Tandem/Mpact EDI Systems

Tandem Computers Inc.
19333 Vallco Parkway
Cupertino, CA 95014
(408) 285-6000

Revenues: $1.93 billion
EDI Contact: Fred Shaw, 703-476-3381

Mpact EDI Systems (wholly owned Tandem subsidiary)
17197 N. Laurel Park Drive
Livonia, MI 48152
J. Peter Selda, President, (313) 464-6711

1. Description of Principal Business

Tandem Computers, Inc. has been the world's premier manufacturer of fault-tolerant transaction processing mainframe computers. It has seen its market dominance slip in the later 1980s and early 1990s. Key markets for Tandem's hardware are banking, airline reservation systems, credit card processing, and telecommunications. In 1991, Tandem replaced the midrange portion of its Cyclone and CLX product lines with fault-tolerant hardware based on reduced instruction set (RISC) computing chips from Mips Computer Systems Inc. Price-performance for the new products are as much as twice as great as for previous Cyclone and Clx products based on proprietary processors.

Mpact EDI Systems was formerly an independent company that had been spun off of a systems integration company called Merit. Merit had developed a real-time EDI system for Chrysler based on a Tandem platform. Merit was sold and the EDI group was divested to become Mpact. Tandem originally provided funding for Mpact, then later bought it entirely as part of Tandem's strategy to develop software businesses that stimulate sales of its hardware.

2. Markets Served

Due to the high-end nature of the Mpact product, Tandem/Mpact is targeting large hub companies with communication needs that go beyond EDI. File transfer, E-mail, and real-time interconnection of application software is possible through the Mpact product. Companies with many divisions that need a consolidated, comprehensive communication switching platform are likely candidates of the product. Because of its high-end switching capabilities, the Mpact product can be used by an EDI value-added

network service that services other companies that use EDI to communicate. An example of the latter kind of customer is Cass Logistics, a freight bill processing company that allows its customers (transportation shippers and carriers) to send EDI documents to each other.

INPUT estimates that only 30 Mpact systems have been sold to date.

3. Evaluation

Strengths

Very High End Product. Offers multiple communication lines and processing speed alternatives. Probably the best EDI software for huge volumes of EDI traffic.

Caters to EDI VAN Market. Around the world, PTTs and other telecommunication providers are open to inexpensive software that allows them to offer EDI services to their corporate customers. Mpact's system is one such product.

Weaknesses

May be before its time. Few EDI users have the huge volumes that the Mpact product warrants.

Small marketing organization. Mpact needs to get out there more.

4. Products, Services, and Prices

All products are priced according to the simultaneous throughput required (i.e., the number of telecommunications lines that can be concurrently supported, usually in initial increments of 3, 6, or 12).

Products run on all Tandem platforms and are not directly priced according to platform (although higher end platforms have higher throughput capacity).

Tandem's current product line consists of CLX-R-1XXX series ($59,000-$175,000), CLX 800 series, Cyclone RISC, and Cyclone (high end). Mpact's software runs on all platforms.

MessageWay Product Line

All products include message control module (mailboxing, switching, etc.), EDI translation module, and communication modules. All prices are for software only and do not include hardware. They are suggested retail prices. Prices to distributors/implementors are lower.

(1) MessageWay EDI System 3 (three concurrent telecommunication lines supported) starts at $45,000. Communications are asynchronous and bisynchronous. Optional modules for SNA or X25 communications are $14,000 each. Pre-built VAN interconnections are $3,500 each.

(2) MessageWay EDI System 6 (six concurrent telcommunication lines supported) $90,000

(3) MessageWay EDI System 12 (12 lines) $180,000. Additional telecommunication lines can be added. Chrysler has an Mpact system with 60 lines.

MessageWay software can also be purchased without the translation module (in the event the client already has a translator). Here prices are $60,000 for a 6 line system, $120,000 for a 12 line system.

5. Alliances

Tandem has an implementor/distributor program set up. Distributors get discounts on suggested retail prices.

To date, Tandem has four distributors in Europe, one each in Israel, Korea, South Pacific, Canada, and in the U.S. National Data Corp. is distributor and user.

LL

Texas Instruments Inc.

13500 North Central Expressway
Dallas, TX 75243
(214) 995-2011

EDI contacts:
Ralph Szygenda, VP and Manager, Information Systems and Services
Clay Youngblood, EDI Product Manager

1992 EDI revenues: $500,000*
*INPUT Estimate

1. Description of Principal Business

Of the $6.8 billion in revenues for 1991, Texas Instruments' (TI) Information Technology group made $749 million, and was the fastest growing division in terms of revenues. TI intends to make software and services a major part of its business while reducing (and, in some cases, divesting) its businesses in semiconductors, components and equipment. The IT group is accelerating its shift toward software, making its Information Engineering Facility (IEF) computer-aided software engineering (CASE) tool available on an ever-widening range of hardware platforms. In 1991, the IT group established the Enterprise Systems business, which sells software and systems integration services for mission-critical internal functions such as computer aided design and manufacturing, marketing and procurement. At this time, the business has a software product line that includes: Global Procurement System, EDI, Order Entry System, Planning System, Manufacturing Automation Systems, and Concurrent Engineering Design Software.

TI reports that it has over 40 people dedicated to its EDI business total covering development, support and sales.

2. Markets Served

TI is approaching EDI prospects in accordance with its other software and systems businesses, which is to go after large accounts where substantial organizational re-engineering is possible. TI's Information Engineering Facility is the general toolbox that is to be used in re-making a given client's organization. Its EDI software is one part of the toolbox. Like the other information technology products of TI, the EDI software was initially developed for TI's own internal use and was later commercialized.

The largest user of its EDI product is TI itself. As of mid-1992, TI had sold three copies of the software on a commercial basis.

3. Evaluation

TI's Information Technology group is coming on strong. TI's foray into offering EDI software and systems integration services is still new. It is relatively high priced but it appears to be a very sophisticated, robust system capable of handling high volumes of messaging and to be fully integrated with company applications. The product appears to deliver on the promise of EDI: full, seamless integration between a company's applications and those of its trading partners. Combining its EDI software with its suite of other strategic function software and its generalizable IEF tool, TI can make a strong re-engineering offering to large organizations. The IEF is not a hands-down general business solution, however, as the INTRICO project failure, an advanced airline reservation system, demonstrated.

4. Product, Services, and Prices

The figurehead of TI's EDI offering is its mainframe-based translator and gateway products. However, TI is developing UNIX translation software and a PC translator to run in a Windows environment.

TI EDI Gateway. Gateway is an MVS store-and-forward processing facility that provides data communication using standard communications protocols. It stores inbound and outbouind EDI transmissions and routes them to their appropriate destinations. Gateway uses five interfaces: batch, CICS, IMS, TSO, and MVS Modify. Gateway can call other computers to pick up electronic documents at a pre-determined time, as well as answer when another computer calls to deliver a transmission. Gateway can keep track of pending transmissions, holding them if necessary until a line is clear. It can also recognize priority transmission codes. Supports all major protocols and VAN interconnects. Gateway is priced at $90,000.

TI EDI Translator translates incoming and outgoing documents, automatically acknowledges incoming transmissions, and reconciles acknowledgements of outgoing transmissions. Table-driven architecture allows easy modification to accomodate new EDI format releases and unique trading partner requirements. Supports the major EDI standards (ANSI, EDIFACT, TRADACOMS) and many industry specific variations as well. Translator contains three components:

- EDI Workbench (a mapping tool that allows all mapping to be done on easy-to-use, menu-driven, Windows 3.0 personal computers)

- EDI Management System (which reports on EDI acitivity in document supervision, trading partner information, and quality control and diagnostics)

- EDI Test Facility, an interactive system which enables an EDI technician to verify the accuracy of a test feed, correct test feed errors and generate an error log of test results.

The TI EDI Translator with the three tools is priced at $85,000.

Event-Driven Module. An event driven module, allowing real-time connection to application software, is priced at $30,000.

5. Alliances

TI has a re-marketing alliance with MCI7, who has the right to remarket TI's EDI software portfolio.

MM

TranSettlements, Inc.

1745 Phoenix Blvd.
Atlanta, GA 30349
(404) 996-8109

President:
Jeff Hill, Account Manager

1. Description of Principal Business

TranSettlements, Inc. (Atlanta, GA) became one of the first major providers of both mainframe EDI translation software and EDI mailboxing/ network services during the mid-eighties. TranSettlements is focused on the trucking industry and its shipper customers. In 1990, TranSettlements sold the EDI software side of its business to TSI International, and with it approximately 160 users of its TranSlate software.

TranSettlements, Inc., is a subsidiary of the Winship Group, a privately-held $60 million transportation consortium. The company was formed in 1977 to research, develop, market and support EDI delivery services. Today, TranSettlements, Inc., is the developer and marketer of TranSend, a value-added network.

2. Markets Served

TranSettlements today has approximately 750 customers to its EDI mailbox network service. Sixty percent are trucking companies and the remainder are large shippers. A handful of railroads are customers and TranSettlements is interconnected with RAILINC, where it picks up Car Location Messages. TranSettlements' business with railroads is almost entirely related to trucking operations. Piggyback and intermodal modes of transportation result in trucking companies wanting to know the location of their truck trailers.

3. Evaluation

From being one of the pioneer EDI network services and software providers, TranSettlements has become a small, niche-oriented service provider only. The company has a loyal customer base. It is ripe for being acquired and certainly has been pursued by other EDI vendors, yet apparently the price wasn't right.

TranSettlements is not a competitive threat to the larger EDI networks. Its customer base alone makes it an ideal acquisition asset.

4. Products, Services, and Prices

TranSettlements' EDI network, TranSend, supports the following communications protocols: SNA, 2780/3780, asynchronous and bisynchronous schemes. It provides WATS-based dial-in and scheduled or priority dial-out services. In-network EDI translation services are available. TranSend customers pay no fees for interconnections with other networks.

TranSettlements is handling approximately 1.3 million EDI messages per month.

NN

Triad Systems Corporation

3055 Triad Drive
Livermore, CA 94550
(415) 449-0606

William W. Stevens, Chairman
James R. Porter, President and CEO
Public Corporation, OTC
Total Employees: 1,407 (9/90)
Total Revenue, Fiscal Year End 9/30/91: $137.5 million

1. Description of Principal Business

Triad Systems Corporation, founded in 1972, designs, develops, manufactures, markets, and supports turnkey systems in three vertical markets: the automotive parts aftermarket, retail hardgoods dealers, and dental. The company also provides automotive parts pricing and catalog updating data base electronic information services.

Triad also provides lease financing to many of its turnkey system clients through its wholly owned subsidiary, TSC Leasing Corporation.

Triad uses CD-ROMs to deliver product catalogs in its turnkey systems, which is one of the first uses of CD-ROM data bases in an EDI application.

Triad is currently organized into five divisions and various subsidiaries, as follows:

- The Automotive Division markets turnkey systems to the automotive parts aftermarket, which includes warehouse distributors, wholesalers (jobbers) and retailers, and auto repair shops. The company currently has over 6,600 Automotive Division customers.

- The Information Services Division provides two proprietary data bases to Triad's Automotive Division customers for automotive parts pricing and catalog updating. Approximately 2,600 of the company's automotive customers subscribe to one or more of these services, compared to 2,200 a year ago.

- The Hardgoods Division markets turnkey systems to hardware stores and home centers, the lumber/building materials market, and decorating retailers. The company has over 2,200 customers in this market, compared to 1,900 a year ago.

- The Dental Division markets turnkey systems to dental practices. Triad currently has over 770 dental customers.

- The Customer Services Division provides predelivery and installation services, customer training, and hardware maintenance and software support services to its turnkey system clients. This division also provides third-party maintenance services for Altos Computer's national value-added resellers and their customers.

- TSC Leasing Corporation, a wholly owned subsidiary, purchases Triad systems for lease to third parties under direct financing leases.

- Triad also has subsidiaries in the U.K., Canada, and Australia that market certain Automotive Division products and services.

2. Markets Served

Approximately 74% of Triad's revenue was derived from the automotive aftermarket, which includes warehouse distributors, auto parts wholesalers, and service dealers. About 24% of revenue was derived from retail hardgoods dealers and 2% from dental practices.

Triad markets to the automotive and retail hardgoods industries through its direct sales organization.

The company markets to private dental practices through a direct sales force, telemarketing, and an independent dealer organization.

Approximately 91% of Triad's revenue was derived from the U.S. The remaining 9% was derived from Canada, Australia, and the U.K.

Offices are located throughout the U.S. in support of sales and marketing, field services, and training. Triad also has offices in Canada, the U.K., Ireland, and Australia.

3. Evaluation

Triad has aggressively focused on its niches and aims to provide systems that satisfy customer needs. Triad won the 1991 Information Technology Association of America's Total Quality Award. Its Information Services organization, representing close to $20 million in revenues, is the fastest growing side of the business—faster than its equipment/turnkey systems side. Triad's move into CD-ROM data bases for electronic parts and labor catalogs, is proving to be a lucrative business. Outside the music industry, Triad is the fifth largest distributor of compact discs (shipping 5,000 per month). Its move into auto repair shops is also proving to be very lucra-

tive. The company understands the business of distribution and is capitalizing on this competence. After a few years of sluggishness and financial restructuring, Triad looks to be on a successful track of developing and marketing information services.

It is different from the EDI vendor in that Triad sells a complete application solution to its customer and EDI happens to be one component of the solution. This approach, INPUT believes, is the most effective and will become the standard approach in selling EDI in the 1990s.

4. Products, Services, and Prices

Approximately 66% of Triad's revenue was derived from turnkey systems (44%) and associated maintenance and support services (42%) and 9% from electronic information services. The remaining 5% of revenue was derived from leasing and other services.

As of January 1992, Triad had more than 11,300 customers worldwide.

Automotive Parts Aftermarket:

The automotive parts aftermarket consists of four principal levels of distribution: manufacturers, warehouse distributors, wholesalers (jobbers) and retailers, and auto repair shops. Manufacturers distribute automotive parts through warehouse distributors to wholesalers and retailers who stock and sell the automobile parts used by auto repair shops and the public.

Historically, Triad's Automotive Division has sold turnkey systems primarily to mid- to large-sized wholesalers. Triad's installed base of wholesaler customers provides a source of recurring revenue through sales of application software, peripherals, hardware upgrades, data services, and customer support.

The Series 12 product line, successor to Triad's original Series 10 system, was introduced in fiscal 1984. These turnkey systems have been designed for the wholesaler market. Smaller warehouse distributors may also use these systems with specialized application software.

- Series 12 systems use multiple 8-bit microprocessors, one or more disk storage units, counter/management terminals, and printers for invoicing and reports. The systems are available in several different models to accommodate wholesalers of all sizes.

- Every system is equipped with standard telecommunications software allowing users to exchange purchase orders and pricing and inventory information with suppliers and, in some cases, customers.

- The systems are designed for modular growth. Optional applications available include the following:

  - Basic Inventory Management: Inventory management reporting, replenishment ordering, item sales history, on-hand balances, and purchase order control.

  - Advanced Inventory Management: Stock level calculation, popularity sales ranking, price labels, price lists, goal planning, and cash flow analysis.

  - Invoice Printing: Point-of-sale and order entry
  - Sales and Core Analysis

  - Accounts Receivable

  - General Ledger

  - Accounts Payable

  - Multi-Store

  - Centralized Accounts Receivable

  - TRANSNET: Automatic order transmission capability directly to the manufacturer via GE Information Services' networks

Triad has also introduced the Series 14 product line, which is targeted to larger wholesalers and smaller warehouse distributors and offers increased processing speed over the Series 12, and the Series 11 product line, which is targeted to smaller clients.

The Series 80 Warehouse Distributor System, introduced in 1980, is based on IBM S/370 computers and is designed for larger warehouse operations. Over 55 Series 80 systems are currently installed.

- An IBM 9370-based warehouse system was introduced in 1988 to replace the Series 80 product. The system supports information retrieval and has the potential for a larger number of application enhancements. Pricing generally ranges from $200,000 to $300,000.

- During fiscal 1990, Triad expanded its product line to include the IBM Microchannel/370 Warehouse System designed to service midrange warehouse operations.

TelePart, introduced in 1987, is a terminal-based system that allows an auto service dealer to order automobile parts electronically by communicating directly with a wholesaler's Triad system.

- The repair shop can access the wholesaler's Triad system to use the Electronic Catalog to check the availability and list price of parts prior to ordering.

- Triad markets these terminals to auto repair shops through its wholesaler customers.

- As of September 1990, over 2,480 TelePart terminals were installed, compared to 1,700 installations at the end of fiscal 1989.

Triad offers three proprietary remote batch data base services to its wholesaler and retailer customers as follows:

- Telepricing is a data base that provides automatic price updates for automotive parts upon a manufacturer's price change.

  - Telepricing services are available via remote batch or magnetic tape.

  - Telepricing customers pay an initial license fee and a monthly subscription fee ranging from $53 to $275.

  - As of the end of fiscal 1990, there were approximately 2,600 Telepricing subscribers, up from 2,375 in fiscal 1989.

- Electronic Catalog is a data base that includes over 1.3 million parts and prices and can provide over 8.8 million automobile parts applications tailored to a wholesaler's inventory.

  - For a given automotive repair, Electronic Catalog identifies all the parts required, together with prices and inventory levels, and prompts the wholesaler to recommend related parts that the customer may need in addition to the part requested.

  - Triad charges a license fee and a monthly subscription fee averaging $200 for this data base and provides the customer with periodic updates.

  - Electronic Catalog customers are required to subscribe to Telepricing to update the pricing information in the Electronic Catalog data base, unless the customer has access to an automatic pricing service provided by a Triad national account.

  - Electronic Catalog is available for Series 11, 12, and 14 systems. Series 10 users can purchase hardware upgrades to Series 12 systems or can install LaserCat, Triad's new CD ROM technology, to access the Electronic Catalog. Triad's Electronic Catalog serves nearly 19,000 automotive counter positions.

- Buyer's Guide is a data base used by wholesalers to assist in making stocking decisions. The data base supplies the make and type of all automobiles that a selected part would fit.

The LaserCat workstation uses CD ROM technology to provide access to Triad's Electronic Catalog and Telepricing data bases. LaserCat features access to more than 1.3 million parts and prices on domestic and import vehicles.

- As of September 30, 1990, approximately 3,600 Lasercat workstations were installed and there are currently over 4,000 installations.

- During fiscal 1990, Triad also introduced the following CD ROM products:

  - LaserGuide™, an inventory management and product-ordering CD ROM workstation

  - LaserCat Connect™, which merges the Electronic Catalog service with point-of-sale software from non-Triad systems

- LaserCat Plus™, an electronic catalog workstation with invoicing and forwarding capabilities, designed for use by smaller automotive jobbers

Retail Hardgoods:

Triad's Hardgoods Division markets turnkey systems to hardware stores and home centers, the lumber/building materials market, and decorating retailers.

- The systems are based on Triad-manufactured minicomputers that incorporate 16-bit microprocessors.

- Applications available include:
  - Point-of-sale
  - Inventory management
  - Pricing
  - Purchasing
  - Receiving
  - Sales analysis
  - Accounting
  - Bar code scanning
  - Automatic price updating

Hardgoods systems range in price from $13,000 to $100,000. The average store system costs approximately $35,000.

EZ Access™ is a special purpose telecommunications terminal, and an enhanced bar code system for retail hardgoods point-of-sale terminals.

The Triad Entry Level System (TELS) is targeted to smaller retailers.

There are currently over 2,200 hardgoods system installations.

In order to facilitate marketing to potential customers, Triad has developed national account relationships with large hardware cooperatives, distributors, and associations to promote the benefits of Triad systems to their retail customers/affiliates. Three of the nation's largest buying cooperatives, Cotter & Company (True Value Hardware and V & S Variety stores), Hardware Wholesalers Inc., and American Hardware, have endorsed Triad systems to their members.

Triad introduced an electronic catalog for True Value Hardware customers, Triad's initial CD ROM-based product for this market.

Dental Systems:

Through the Dental Division, Triad markets practice management turnkey systems to dental practices.

- The systems are based on minicomputers and range in price from $9,500 to $56,000, with an average system price of $12,000.
- Applications supported include receivables, billing, accounting, appointment scheduling, follow-up reminders, insurance processing, word processing, and computer-based training functions.
- Triad introduced the T1000 series system, which offers increased speed, and the T500 for single practitioners. During fiscal 1990, a multiuser system was introduced.

In order to obtain broader industry acceptance for its product line, Triad has endorsements and marketing relationships with major dental associations, including the computer subsidiary of the American Dental Association and California Dental Association.

Customer Services:

Triad provides the following services to its clients in conjunction with its turnkey system sales:

- Predelivery services include cost-justification analysis, site planning and preparation, training for management and employees, installation planning, and customer visits to other Triad user sites.
- Zapstart is a service that preloads an individual automotive customer's inventory, pricing, and parts applications data into its Triad system upon installation, saving customers manual data entry time.

  - Hardware retailers that are customers of certain hardware cooperatives or distributors can preload inventory files provided by these cooperatives or distributors.

  - Triad can also deliver a dental system preloaded with the practice's patient files.

- Customer training is available from 37 domestic and eight foreign Triad education centers. Over 25,000 individuals have been trained. Triad also provided training through the sale of video tutorials and extended customer education. Seminars and workshops are also available.

- Three months of system support are included in the price of a Triad system. Post-sale support is available through a System Support Agreement. The services offered include preventive and remedial maintenance, hardware engineering modifications, dialing system operating support by telephone, and software enhancements.

  - Field engineers and managers work out of 119 domestic and 20 foreign field service offices.

  - The monthly fee due under the support agreement varies with system size and averages $450.

  - Triad's Advice Line gives customers telephone access to personnel able to perform on-line diagnostics and dispatch a field engineer if on-site service is necessary.

5. Facilities

Triad uses two of its Series 80 systems to update and store pricing data for its Telepricing service. The data is transmitted to client Triad systems via telephone lines on a remote batch basis, generally after hours, or by magnetic tape. Triad has a DEC VAX-11/780 installed at its headquarters for internal accounting functions.

OO
TSI International

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Wilton, CT 06897
(203) 761-8600
(800) 234-5566

Constance F. Galley, President and CEO
Robert Bouton, Vice President
Ted Watson, Vice President

Private Corporation
Total Employees: 150
1992 Revenues: $10-$20 million*
*INPUT estimate

1. Description of Principal Business

TSI International develops and markets software products for IBM mainframes and PCs with a special focus on solutions for the delivery of data to production systems. TSI addresses the market needs of traditional (manual) data entry as well as EDI. The company is an IBM Business Partner.

Founded in 1967, TSI successfully developed and marketed systems software products in the IBM mainframe software market, culminating in the 1978 introduction of KEY/MASTER, which grew over the following years to become the world's leading data input software system.

In June 1989, Warburg, Pincus Ventures, the venture group of E. M. Warburg, Pincus & Co., Inc., chose TSI as a vehicle for an undisclosed but purportedly substantial capital investment in the EDI market.

The capital infusion made its most dramatic impact in 1990 when TSI launched its own mainframe translation software product, Trading Partner. During 1990, TSI also acquired the license and customer base to TranSettlement's TranSlate EDI software for IBM mainframes and acquired the PC-translator company Foretell Corporation (from JWP, Inc.).

2. Markets Served

TSI is approaching large Fortune 2000 accounts and these accounts' trading partners. TSI's marketing philosophy, in line with the successful EDI vendors, is to sell to a large hub company and its many spoke suppliers in a "project management" package, providing mainframe EDI software to the hub and PC EDI software to the spokes.

TSI has been very successful with the hub-spoke approach beginning with Wal-Mart (one of the most advanced EDI users in the world). It has installed its Trading Partner PC software package in approximately 1,500 Wal Mart supplier locations. It is planning on doing the same with many other large hub accounts.

TSI, leveraging its knowledge of hub company EDI requirements, is launching a mass marketing approach, selling EDI kits, which are pre-formatted PC software customized for specific large hub companies. This "mass market" approach was launched in the fourth quarter of 1992.

TSI has large contracts in the United Kingdom. The Irish postal authority, PostGEM, uses Trading Partner PC (formerly Foretell's ESP II) software with postal authority's suppliers. The U.K. chemical/pharmaceutical firm ICI is using Trading Partner PC in its various divisions and trading partner sites.

Approximately 75% of TSI's revenues are derived from U.S. sales and 25% from non-U.S. sales. Approximately 60% of TSI's revenues come from its KEY/MASTER offering and 40% come from its EDI products.

TSI's mainframe EDI installations are primarily in the U.S. The PC software is more widely distributed among installations in the U.K., Europe, Hong Kong, Singapore, and Australia.

TSI markets and supports its software worldwide through its headquarters; U.S.-based sales offices; a direct sales office servicing the U.K.; and a network of regional offices, agents, and distributors in 26 countries.

3. Evaluation

TSI is one of the leading EDI software companies. It has strong technology, a conscientious management and (apparently) solid financial resources.

Strengths

Good Technology. Its Trading Partner PC and mainframe products have gotten consistently high praise from users. The PC product was the first EDI software to run in a Windows environment, which has helped small EDI users to integrate EDI messaging with PC software packages (especially spreadsheets and data bases).

Good Customer Relationships. TSI works closely with its clients and has developed its product technology in response to specific client requests.

Parallel Product Line. TSI's data entry software (reportedly the dominant package in this market niche) allows TSI to play on both "sides of the fence:" manual data entry and electronic data entry. However, TSI management doesn't consider its Keymaster customer base as a potential EDI market. TSI has not publicly announced a strategy to offer EDI software to the 2,000 worldwide customers of its KEY/MASTER data entry software. This could be a viable strategy, however, as TSI's Trading Partner software uses the same application interface modules that KEY/MASTER does. Conceivably, a single platform running KEY/MASTER and Trading Partner could simultaneously support manual and EDI data entry into applications.

Solid Financing. Warburg, Pincus apparently has supported TSI generously.

PC Windows-Based Kits. TSI's newly announced hub "kits" could be a very effective way to reach the 6 million small businesses in the U.S. Furthermore, TSI's Windows-based PC translation software provides a cost-effective way for small companies to integrate EDI capabilities with simple applications. The DDL file exchange method within Windows allows TSI's translator to retrieve and send files from spreadsheets, data bases, and other PC-based applications.

Weaknesses

Lacks Full Product-Service Suite. TSI's competitors, GEIS, IBM, and Sterling Software all provide software for three basic platforms (PC, midrange and mainframe) as well as network services. They therefore provide more of a solution to customers compared to TSI, which provides more of the strictly defined EDI technology.

4. Products, Services, and Prices

Approximately 60% of TSI's revenues come from its KEY/MASTER offerings and 40% comes from its EDI products.

KEY/MASTER provides for data input to production applications and data bases from on-line 3270 terminals, off-line PCs and LANs, and non-keyed sources such as bar codes, scanners, OCR, imaging, and ATMs. KEY/MASTER runs on IBM mainframes (370, 30XX, 43XX, and 937X) under all current versions of VSE, MVS, and VM/CMS. There are approximately 2,200 mainframe installations of KEY/MASTER throughout 28 countries in the world.

PC KEY/MASTER is a menu-driven data input software system designed to suit the requirements of remote, casual users as well as decentralized, high-volume, data input users. Written in C, PC KEY/MASTER runs under PC-DOS on the IBM XT, AT, PS2, or any compatible PC and on any PC-DOS-compatible networking software, such as Novell's Netware and IBM's Token Ring.

Trading Partner is a high-performance, mainframe-based EDI management software package.

- Components include:
  - A translator for generating and validating EDI standard formats. The translator supports North American EDI implementations, the EDIFACT international standard, and user-tailored variations.
  - A communications gateway for network-independent data transmission between partners
  - An Applications Gateway™ for importing data to and exporting data from applications systems. The gateway contains the following features:
- An on-line mapping facility that isolates production applications from changes in EDI formats
- An exceptions-processing check that catches any incoming data that passes standards validation but lacks information needed by the application (such as special pricing or sales commissions) or that fails other applications edits (such as validation of customer number)
- Automatic data look-up to substitute one company's part numbers for another's in tables or external files
- Arithmetic capabilities, range checks, and other editing functions
- EasyLogic, a tool for defining complex conditions and special edits from within Trading Partner without external programming
- Integration of EDI data with bar-coded or scanned data
- An on-line window into incoming and outgoing data
- A facility for keying of outbound transactions
  - An administrative component for maintaining partner profiles and tailoring EDI exchanges to meet the special needs of each EDI partnership;
  - An audit facility for tight monitoring and control of outgoing and incoming data.
- Trading Partner is priced from $30,000 to $200,000.

TranSlate is an EDI translation software package that has been installed on a variety of platforms, including IBM mainframes (MVS and DOS/VSE), Unisys, Hewlett-Packard, Honeywell, Tandem, and DEC. TSI purchased the license to this package from TranSettlements in 1990 and has upgraded the package. TSI continues to support the user base. TSI has developed and distributed two new releases and plans a major release in mid-1991 to add on-line mapping capabilities to the product.

- There are approximately 170 installations of TranSlate, including ones at major automotive, textile, manufacturing, banking, petroleum, grocery, retail, steel, and transportation companies.

- TranSlate is priced in the range of $25,000 to $35,000.

Trading Partner PC is EDI translation software designed for PCs. It runs in the Microsoft's Windows environment and makes use of the environment's multitasking capabilities. Trading Partner PC was developed by Foretell Corporation, which TSI acquired in 1990.

- Trading Partner PC supports ANSI X12, EDIFACT, and TRADACOMS EDI standard formats plus industry implementations such as VICS and UCS. It has communication interfaces for such networks as AGRIDATA, EDINET, GEIS, IBM IN, INS, ISTEL, ORDERNET, REDInet, Sears Communication company, and others.

- Trading Partner PC is the first EDI product implemented in Windows 3.0. It uses Microsoft's Windows Dynamic Data Exchange (DDE) to map EDI data back and forth between applications. DDE enables all Windows applications to exchange data with each other with easy point-and-click techniques. A cell in an Excel spreadsheet, for example, can be linked to an EDI transaction set.

- In conjunction with TSI's kits program, Trading Partner PC has been reduced in price from $2,600 to $495

PC Kits: TSI sells modules of software that run in conjunction with Trading Partner PC. The modules, or kits, are pre-collected and pre-mapped EDI transaction sets for specific hub accounts. To date, TSI has produced a line of approximately 40 kits to be used by spoke companies to such hubs as Sears, WalMart, Allstate Insurance, etc. Another 165 are in the works. TSI has a "kit producing" engine. Kits are priced from $249 to $345 per kit.

Also, TSI sells a full complement of EDI standards as one form of kit. These full EDI standard collections are for: X12, EDIFACT, and TRADACOMS and sell for $295 each.

PP

Unisys Corporation

P.O. Box 500
Blue Bell, PA 19424-0001
(215) 986-2000

James Unruh, Chairman and CEO
Employees: 60,000
1991 Revenue: $8.7 billion

1. Description of Principal Business

Unisys is one of five or six companies in the world that manufacture information equipment from mainframes to desktop computers. In 1991 it took a $1.2 billion charge to reduce employment by at least 10,000 positions, consolidate facilities, streamline product lines, tighten market focus and generally reposition the company for the 1990s. The company is still in this repositioning phase.

2. Markets Served

Unisys' strategic markets are fourfold: financial services, airlines and travel, communications, and the government sector. These markets represent high transaction volumes and complex networking enveironments which are the kind of environments that Unisys has technological strengths. Unisys provides airline reservation systems and cargo systems; mainframe-based retail and wholesale banking systems; branch automation systems; document processing systems; welfare claims processing systems; telephone line tracking systems, among others. Also, Unisys has endeavored to be a leader in systems and environment platform software, including client-server computing, UNIX, open systems, and CASE software development tools.

Its EDI software offering, EaDIplus, is part of this latter systems software strategic focus. Unisys' strategy is to sell EaDIplus with multiple translator offerings worldwide but with particular emphasis to multinational companies. Unisys has installations of the product in every continent (except Antartica). In Europe, Unisys has installed the EaDI product with utilities and service bureaus. In the Pacific Rim, it has contracts with Telecom Plus (Australia) and Netway Communications (New Zealand). Unisys is selling to the Japanese market. In the U.S., Unisys is focusing the EaDIplus product in its traditional customer bases of banking, insurance and Federal government.

3. Evaluation

Unisys' EaDIplus product is an EDI mapping tool, allowing the user to integrate software applications with EDI translation software (of other vendors) in a multi-vendor hardware environment. Mapping has become an increasingly important component of EDI, as EDI translator-to-application software integration has been more troublesome than originally anticipated. Thus, Unisys' product is addressing one of the key breakdowns of the EDI market. Its UNIX client-server architecture is a good move here, giving the needed flexibility and hardware independence that integration tools should give. The product is fairly robust as a general communication gateway among different applications. The product as yet has not made a large penetration, with not more than 100 installations, INPUT estimates.

4. Products, Services, and Prices

EaDIplus is part of Unisys' overarching systems architecture, the Integrated Information Environment. EaDIplus not only acts as a specialized EDI gateway/server but it also acts as a systems integration utility between non-EDI applications.

EaDIplus is available on the Unisys U6000 family of open systems and Unisys System V operating system, an enhanced version of AT&T UNIX system V.

Servers integrate IS department applications. EaDIplus provides integration of EDI services with IS applications without requiring EDI-specific modificatoin of teh IS applications themselves. EaDIplus provides EDI gateway, management, translation, mapping, audit and communication facilities for multiple applications distributed across multiple hosts.

On the larger U6000 systems which themselves may be information hubs, EaDIplus may be implemented as a client/server process providing the EDI services for applications co-exisiting on the same system as well as for other applications distributed across multiple hosts.

EaDIplus is priced based on processor as follows:

Processor	EaDIplus Price
6030	$14,000
6050	$18,000
6060	$22,000
6070	$29,000
6080	$35,000

5. Alliances

Unisys has an exclusive marketing relationship with EDI, Inc. under which EDI, Inc. developed TELINK/osa, a UNIX-based translator with a seamless interface to EaDIplus. EaDIplus is also installed and operational with the following UNIX-based EDI translation software packages: EDI*ExCel (American Business Computer), Kaleidoscope (Howell & Associates, UK), Softline (Softline, Finland), Iris (Systematic, Denmark), and Codem (Stesud, Belgium).

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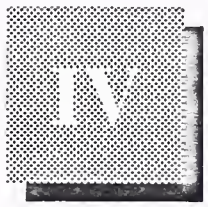

EDI Market Participants by Delivery Mode

This chapter is a cross index of companies that directly and indirectly offer EDI software and services. Companies are grouped according to delivery mode and, within delivery mode, listed alphabetically.

A

EDI Software Vendors

Advanced Communications Systems (North Olmsted, OH)

Advantage Systems, Inc. (Walham, MA)

Advantis (Schaumberg, IL)

American Business Computer, Inc. (Ann Arbor, MI)

American Custom Software, Inc. (Cookeville, TN)

APL Group (Wilton, CT)

Arkansas Systems, Inc. (Little Rock, AR)

ARI Network Services, Inc. (Milwaukee, WI)

Auto-Trol Technology Corp. (Denver, CO)

Baggerly & Associates (Claremont, CA)

Bell Atlantic Corporation (Philadelphia, PA)

Birmingham Computer Group, Inc. (Bloomfield Hill, MI)

Blue Rainbow Software International Corp. (Atlanta, GA)

Bonner & Moore Associates, Inc. (Houston, TX)

Cambridge Technology Partners (Cambridge, MA)

CANAC Telecom

CAN/AM Tech (US) Inc.

Carberry Technology, Inc.

Cleo Communications (Ann Arbor, MI)

CMI Competitive Solutions

Computer Associates, International, Inc. (Garden City, NY)

CTI Communications

Data Design Associates (Lanham, MD)

Data Dispatch Corp (McLean, VA)

Datacom, Inc. (Holmdel, NJ)

Datacom Global Communications, Inc.

Data-Basics, Inc. (Cleveland, OH)

Digit Software, Inc. (Silver Spring, MD)

Digital Equipment Corporation (Maynard, MA)

Distribution Architects International, Inc. (Tempe, AZ)

Distribution Sciences, Inc. (Des Plaines, IL)

DNS Associates, Inc. (Burlington, MA)

Dynamic Business Systems

EDI, Inc. (Gaitherburg, MD)

EDI Able, Inc. (Malvern, PA)

EDI Solutions, Inc. (Minneapolis, MN)

Electronic Data Systems Corp. (Dallas, TX)

Electronic Data Systems of Canada, Ltd. (Scarborough, Ont.)

Encompass (Cary, NC)

Engineering DataXpress, Inc.

Extol, Inc. (Frackville, PA)

Forbes Business Systems, Inc.

Foster, M.B. Associates, Ltd.

Future Three Software, Inc.

GE Information Services (Rockville, MD)

Genzlinger Associates, Inc. (Troy, MI)

Grace Computer Resources, Inc.

GSC Associates, Inc.

Harbinger EDI Services, Inc. (Atlanta, GA)

ICL, Inc. (Irvine, CA)

Imrex Computer Systems, Inc. (Great Neck, NY)

Independent Business Software

Information Management Consultants

Intec Systems Corp (Trumbull, CT)

Intec Systems, Inc. (West Palm Beach, FL)

Integral EDI

Integral Systems, Inc. (Lanham, MD)

International Business Machines Corporation (White Plains, NY)

Isocor (Los Angeles, CA)

LDJ, Inc. (Troy, MI)

LEK Product Marketing

Lloyd Bush, Inc. (New York, NY)

Micro Gate Corp. (Austin, TX)

Microsystems Engineering Corp (Hoffman Estates, IL)

MKS, Inc. (Plymouth Meeting, PA)

National Systems, Inc. (Chicago, IL)

Northern Telecom, Inc.

Omnicom, Inc. (Vienna, VA)

Paper Free Software

Perwill EDI

Piedmont Systems, Inc. (Danvers, MA)

Premenos Corporation (Concord, CA)

Prime Factors, Inc. (Eugene, OR)

Radley Business Computers, Inc. (West Bloomfield, MI)

RMS (Addison, IL)

SAA Consultants, Ltd.

SDM International, Inc. (Fuquay-Varina, NC)

SE Technologies, Inc. (Stamford, CT)

Serengeti Systems

Shaffstall Corp. (Indianapolis, IN)

Shared Financial Systems, Inc. (Dallas, TX)

Software Artisans, Inc.

Sterling Software, Inc. (Dublin, OH)

St. Paul Software, Inc. (St. Paul, MN)

Success Systems, Inc. (Norcross, GA)

Supply Tech, Inc. (Ann Arbor, MI)

Synergistic Systems (Neptune Beach, FL)

System Software Associates, Inc. (Chicago, IL)

Tandem Computers, Inc. (Cupertino, CA)

Telecommunications Interface Corp.

Texas Instruments Incorporated (Dallas, TX)

Transaction Software Technologies

Trinary Systems, Inc. (Farmington Hills, MI)

TSI International (Deerfield, IL)

Union Pacific Technologies (St. Louis, MO)

Unisys Corporation (Blue Bell, PA)

Universal Software, Inc. (Brookfield, CT)

US Lynx, Inc.

Userbase, Inc.

Vista Computer, Inc. (Tarrytown, NY)

Vocam Systems (Bloomington, MN)

Wagner Data Systems

Wang Network Systems

Wilder and Weber Data Services, Inc.

B

EDI Value-Added Network Service Providers

Advantis (Schaumberg, IL)

Air, Inc.

Ameritech Information Systems, Inc. (Downers Grove, IL)

American Telephone And Telegraph Co. (New York, NY)

Bell Atlantic Corporation (Philadelphia, PA)

BT North America, Inc. (San Jose, CA)

Cable & Wireless Communications, Inc. (Vienna, VA)

Cambridge Technology Partners (Cambridge, MA)

CANAC Telecom

Compuserve, Inc. (Columbus, OH)

Dun & Bradstreet Dunsnet (Bethlehem, PA)

Electronic Data Systems Corp. (Dallas, TX)

EDS of Canada, Ltd.

EDI Able (Malvern, PA)

EMS EDI Services

Encompass (Cary, NC)

EnerNet

GE Information Services (Rockville, MD)

GTE Health Systems/Hospital Info. Sys. Div. (Stamford, CT)

Harbinger EDI Services, Inc. (Atlanta, GA)

ICL, Inc. (Irvine, CA)

Infonet (El Segundo, CA)

Immedia Infomatic

Kleinschmidt, Inc. (Deerfield, IL)

Maersk Data Services

Martin Marietta Corp (Bethesda, MD)

MCI Communications Corp (Washington, DC)

National Data Corp. (Atlanta, GA)

National Electronic Information Corp. (Atlanta, GA)

Pacific Bell (San Francisco, CA)

Railinc Corporation (Washington, DC)

St. Paul Software, Inc. (St. Paul, MN)

Sterling Software, Inc. (Dublin, OH)

SWIFT

Telecom Canada

Transact Data Services

Transettlement, Inc. (Atlanta, GA)

Transportation Data Network International (Skokie, IL)

Union Pacific Technologies (St. Louis, MO)

US Sprint Telecommunications Corp. (Kansas City, MO)

Userbase, Inc.

Vista Computer, Inc. (Tarrytown, NY)

Vocam Systems (Bloomington, MN)

World Trade Services, Inc. (Beaverton, OR)

C

EDI Industry Clearinghouses, Processing Service Providers, and Related Electronic Information Service Providers

Air, Inc.

ARI Network Services, Inc. (Milwaukee, WI)

National Automated Clearinghouse Association (NACHA) (Herndon, VA)

Cambridge Technology Partners (Cambridge, MA)

CHIPS

Dun & Bradstreet Dunsnet (Bethlehem, PA)

Encompass (Cary, NC)

EnerNet

Insurance Value Added Network Services (Greenwich, CT) (Ivans)

National Electronic Information Corp. (Atlanta, GA)

NWDA Service Corp.

Petrodex

Pubnet

QRS Systems (Richmond, CA)

Railinc Corporation (Washington, DC)

Shipnet

SWIFT

TNT Information Services

Vista Computer, Inc. (Tarrytown, NY)

World Trade Services, Inc. (Beaverton, OR)

D

EDI Professional Service Firms

Advantis (Schaumberg, IL)

Advent Group

Ameritech Information Systems, Inc. (Downers Grove, IL)

Andersen Consulting (Chicago, IL)

Arthur D. Little, Inc. (Cambridge, MA)

ARI Network Services, Inc. (Milwaukee, WI)

Aztech America (Detroit, MI)

Bell Atlantic Corporation (Philadelphia, PA)

Bort & Associates (Sherman Oaks, CA)

Cambridge Technology Partners (Cambridge, MA)

Cardinal Compass Consulting

Connect Technologies Group

Cooke, David H & Associates, Inc.

Cross Hill Data Services

Data Communication Solutions

DC Systems

Deloitte & Touche (Wilton, CT)

Digital Equipment Corporation (Maynard, MA)

EDI Advantage

EDI Group, Ltd.

EDI Partners

EDI Q

EDI Support

EDI Systems Integration

Electronic Data Systems Corp. (Dallas, TX)

Electronic Data Systems of Canada, Ltd. (Scarborough, Ont.)

EPI, International (Kalkaska, MI)

Ernst & Young (New York, NY)

Forbes Business Systems, Inc.

Foresight Resources Corp (Kansas City, MO)

Foresight Technologies Corporation (Norwalk, CT)

Franz, Patrick Consulting

GE Information Services (Rockville, MD)

Gartner Group (Stamford, CT)

Guilbert & Associates, Inc. (Washington, DC)

Harris Information Systems Consulting

ICL, Inc. (Irvine, CA)

Information & Technology Strategies

INPUT (Mountain View, CA)

Inter-Data Engineering, Inc. (Miami, FL)

Interlink Resource Group, Inc.

KPMG Peat Marwick (Chicago, IL)

Lamarian Systems, Inc. (Nynex) (New York, NY)

Macro X Services

MWH Consulting

New England EDI Services

Omega Systems, Inc. (Pittsburg, PA)

Origin Technology, Inc. (Sunnyvale, CA)

PLP Systems

QED Systems (Minneapolis, MN)

Raser, Inc.

SAA Consultants, Ltd.

Softcare Consulting, Inc.

Software Data Services

Sterling Software, Inc. (Dublin, OH)

St. Paul Software, Inc. (St. Paul, MN)

Tandem Computers, Inc. (Cupertino, CA)

T.L. Ashford & Associates

E

Bank EDI/EFT Service Providers

Bank of Boston Corporation (Boston, MA)

Bank of Montreal (Montreal, Quebec)

Bank of Nova Scotia

Banque Nationale (Canada)

Canadian Imperial Bank of Commerce (Toronto, Ont., Canada)

Cass Logistics, Inc. (St. Louis, MO)

The Chase Manhattan Corporation (New York, NY)

CNS/Sovran (Atlanta, GA)

Continental Bank

First Chicago Corporation (Chicago, IL)

First Interstate Bancorp (Los Angeles, CA)

Harris Bank

Mellon Bank (Pittsburg, PA)

Philadelphia National Bank

Royal Bank of Canada (Montreal, Canada)

Toronto Dominion Bank (Toronto, Canada)

Wells Fargo & Company (San Francisco, CA)

F

EDI/EFT Software Vendors

Advantage Systems, Inc. (Walham, MA)

Data Tech EDI Systems (San Rafael, CA)

Maxxus, Inc. (San Francisco, CA)

Prime Factors, Inc. (Eugene, OR)

Shared Financial Systems, Inc. (Dallas, TX)

Sterling Software, Inc. (Dublin, OH)

Stockholder Systems, Inc. (Norcross, GA)

G

Telephone Companies That Provide EDI Services

Ameritech Information Systems, Inc. (Downers Grove, IL)

American Telephone And Telegraph Co. (New York, NY)

Bell Atlantic Corporation (Philadelphia, PA)

Bellsouth Corporation (Atlanta, GA)

BT North America, Inc. (San Jose, CA)

Cable & Wireless Communications, Inc. (Vienna, VA)

MCI Communications Corp (Washington, DC)

Nynex Corp. (New York, NY)

Pacific Bell (San Francisco, CA)

US Sprint Telecommunications Corp. (Kansas City, MO)

H

Systems Vendors for Public Networks

Harbinger EDI Services, Inc. (Atlanta, GA)

ICL, Inc. (Irvine, CA)

Marbern

Retix, Inc. (Santa Monica, CA)

I

Systems Vendors for Private Networks

Action Technologies, Inc. (Alameda, CA)

Digital Equipment Corporation (Maynard, MA)

Isocor (Los Angeles, CA)

Novell (Provo, UT)

Retix, Inc. (Santa Monica, CA)

SoftSwitch, Inc. (Wayne, PA)

Tandem Computers, Inc. (Cupertino, CA)

Texas Instruments Incorporated (Dallas, TX)

Verimation

J

Application Software and Turnkey Systems Vendors with EDI Features

American Software, Inc. (Atlanta, GA)

Arkansas Systems, Inc. (Little Rock, AR)

Auto-Trol Technology Corp. (Denver, CO)

Computer Associates, International, Inc. (Garden City, NY)

Data Solutions

Digital Equipment Corporation (Maynard, MA)

Engineering DataXpress, Inc.

GTE Health Systems/Hospital Info. Sys. Div. (Stamford, CT)

Hewlett-Packard Co. (Palo Alto, CA)

ICL, Inc. (Irvine, CA)

Imrex Computer Systems, Inc. (Great Neck, NY)

Information Management Consultants, Inc. (McLean, VA)

Interactive Information Systems, Inc. (Tucson, AZ)

International Business Machines Corporation (White Plains, NY)

Microsystems Engineering Corp (Hoffman Estates, IL)

MKS, Inc. (Plymouth Meeting, PA)

Motorola, Inc. (Schaumburg, IL)

Northern Telecom, Inc. (Nashville, TN)

Omnicom, Inc. (Vienna, VA)

Raser, Inc.

Stratus Computer, Inc. (Marlborough, MA)

System Software Associates, Inc. (Chicago, IL)

Tandem Computers, Inc. (Cupertino, CA)

Telxon Corp. (Akron, OH)

Texas Instruments Incorporated (Dallas, TX)

Triad Systems Corporation (Livermore, CA)

Vista Computer, Inc. (Tarrytown, NY)

Vocam Systems (Bloomington, MN)

Wilder and Weber Data Services, Inc.

K

Large EDI Users That Offer EDI Support to Trading Partners

American President Companies, Ltd. (Oakland, CA)

CSX Corporation (Richmond, VA)

Federal Express Corp. (Memphis, TN)

K mart Corporation (Troy, MI)

Union Pacific Corp. (Bethlehem, PA)

Wal-Mart Stores, Inc. (Bentonville, AR)